



# **Computer Repair, Operations and Maintenance (C-ROM) Level I**

## ***Course Description***

*Computer Repair, Operations and Maintenance (C-ROM) I* is a course designed to help students understand the basic, underlying concepts of the knowledge, skills and practices of the computer support industry by learning about its history, career opportunities, business ethics, health and safety, computer systems and troubleshooting skills.

*Computer Repair, Operations and Maintenance (C-ROM) I* is a five (5) credit course that spans four (4) units and meets daily for forty (40) minutes for the entire school year, or an equivalent with an alternate scheduling system. This course represents the first level of a three-year sequence of the program and targets 9<sup>th</sup> and 10<sup>th</sup> grade students interested in this field.

# **Computer Repair, Operations and Maintenance (C-ROM) Level I**

<b>Pacing Guide</b>		
<b>Unit</b>	<b>Topic</b>	<b>Suggested Timing</b>
Unit 1	IT Careers and Internet Safety	approx. 10 weeks
Unit 2	Computer Components and Repair Tools	approx. 7 weeks
Unit 3	Computer System Repair and Upgrade Issues	approx. 10 weeks
Unit 4	Website and Video Making Skills	approx. 8 weeks

## Educational Technology Standards

8.2.12.A.1, 8.2.12.A.2, 8.2.12.A.3, 8.2.12.B.1, 8.2.12.B.2, 8.2.12.C.6, 8.2.12.D.1

- **Technology Operations and Concepts**
  - Create a personal digital portfolio which reflects personal and academic interests, achievements, and career aspirations by using a variety of digital tools and resources.
- **Creativity and Innovation**
  - Apply previous content knowledge by creating and piloting a digital learning game or tutorial.
- **Communication and Collaboration**
  - Develop an innovative solution to a real world problem or issue in collaboration with peers and experts, and present ideas for feedback through social media or in an online community.
- **Digital Citizenship**
  - Demonstrate appropriate application of copyright, fair use and/or Creative Commons to an original work.
- **Research and Information Literacy**
  - Produce a position statement about a real world problem by developing a systematic plan of investigation with peers and experts synthesizing information from multiple sources.
- **Critical Thinking, Problem Solving, Decision Making**
  - Evaluate the strengths and limitations of emerging technologies and their impact on educational, career, personal and or social needs.

## Career Ready Practices

*Career Ready Practices describe the career-ready skills that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study.*

### **CRP1. Act as a responsible and contributing citizen and employee**

Career-ready individuals understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good.

### **CRP2. Apply appropriate academic and technical skills.**

Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.

### **CRP3. Attend to personal health and financial well-being.**

Career-ready individuals understand the relationship between personal health, workplace performance and personal well-being; they act on that understanding to regularly practice healthy diet, exercise and mental health activities. Career-ready individuals also take regular action to contribute to their personal financial well-being, understanding that personal financial security provides the peace of mind required to contribute more fully to their own career success.

### **CRP4. Communicate clearly and effectively and with reason.**

Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready

## Career Ready Practices

individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.

**CRP5. Consider the environmental, social and economic impacts of decisions.**

Career-ready individuals understand the interrelated nature of their actions and regularly make decisions that positively impact and/or mitigate negative impact on other people, organization, and the environment. They are aware of and utilize new technologies, understandings, procedures, materials, and regulations affecting the nature of their work as it relates to the impact on the social condition, the environment and the profitability of the organization.

**CRP6. Demonstrate creativity and innovation.**

Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest value. They seek new methods, practices, and ideas from a variety of sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand how to bring innovation to an organization.

**CRP7. Employ valid and reliable research strategies.**

Career-ready individuals are discerning in accepting and using new information to make decisions, change practices or inform strategies. They use reliable research process to search for new information. They evaluate the validity of sources when considering the use and adoption of external information or practices in their workplace situation.

**CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.**

Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.

**CRP9. Model integrity, ethical leadership and effective management.**

Career-ready individuals consistently act in ways that align personal and community-held ideals and principles while employing

## Career Ready Practices

strategies to positively influence others in the workplace. They have a clear understanding of integrity and act on this understanding in every decision. They use a variety of means to positively impact the directions and actions of a team or organization, and they apply insights into human behavior to change others' action, attitudes and/or beliefs. They recognize the near-term and long-term effects that management's actions and attitudes can have on productivity, morals and organizational culture.

### **CRP10. Plan education and career paths aligned to personal goals.**

Career-ready individuals take personal ownership of their own education and career goals, and they regularly act on a plan to attain these goals. They understand their own career interests, preferences, goals, and requirements. They have perspective regarding the pathways available to them and the time, effort, experience and other requirements to pursue each, including a path of entrepreneurship. They recognize the value of each step in the education and experiential process, and they recognize that nearly all career paths require ongoing education and experience. They seek counselors, mentors, and other experts to assist in the planning and execution of career and personal goals.

### **CRP11. Use technology to enhance productivity.**

Career-ready individuals find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring new technology. They are proficient with ubiquitous technology applications. They understand the inherent risks-personal and organizational-of technology applications, and they take actions to prevent or mitigate these risks.

### **CRP12. Work productively in teams while using cultural global competence.**

Career-ready individuals positively contribute to every team, whether formal or informal. They apply an awareness of cultural difference to avoid barriers to productive and positive interaction. They find ways to increase the engagement and contribution of all team members. They plan and facilitate effective team meetings.

## Differentiated Instruction

### Strategies to Accommodate Students Based on Individual Needs

<u>Time/General</u>	<u>Processing</u>	<u>Comprehension</u>	<u>Recall</u>
<ul style="list-style-type: none"> <li>Extra time for assigned tasks</li> <li>Adjust length of assignment</li> <li>Timeline with due dates for reports and projects</li> <li>Communication system between home and school</li> <li>Provide lecture notes/outline</li> </ul>	<ul style="list-style-type: none"> <li>Extra Response time</li> <li>Have students verbalize steps</li> <li>Repeat, clarify or reword directions</li> <li>Mini-breaks between tasks</li> <li>Provide a warning for transitions</li> <li>Reading partners</li> </ul>	<ul style="list-style-type: none"> <li>Precise step-by-step directions</li> <li>Short manageable tasks</li> <li>Brief and concrete directions</li> <li>Provide immediate feedback</li> <li>Small group instruction</li> <li>Emphasize multi-sensory learning</li> </ul>	<ul style="list-style-type: none"> <li>Teacher-made checklist</li> <li>Use visual graphic organizers</li> <li>Reference resources to promote independence</li> <li>Visual and verbal reminders</li> <li>Graphic organizers</li> </ul>
<u>Assistive Technology</u>	<u>Tests/Quizzes/Grading</u>	<u>Behavior/Attention</u>	<u>Organization</u>
<ul style="list-style-type: none"> <li>Computer/whiteboard</li> <li>Camera phone</li> <li>Spell-checker</li> <li>Online Translation Software</li> </ul>	<ul style="list-style-type: none"> <li>Extended time</li> <li>Study guides</li> <li>Shortened tests</li> <li>Read directions aloud</li> </ul>	<ul style="list-style-type: none"> <li>Consistent daily structured routine</li> <li>Simple and clear classroom rules</li> <li>Frequent feedback</li> </ul>	<ul style="list-style-type: none"> <li>Individual daily planner</li> <li>Display a written agenda</li> <li>Note-taking assistance</li> <li>Color code materials</li> </ul>



## Enrichment

### **Strategies Used to Accommodate Based on Students Individual Needs:**

- Adaption of Material and Requirements
- Evaluate Vocabulary
- Elevated Text Complexity
- Additional Projects
- Independent Student Options
- Projects completed individual or with Partners
- Self Selection of Research
- Tiered/Multilevel Activities
- Learning Centers
- Individual Response Board
- Independent Book Studies
- Open-ended activities
- Community/Subject expert mentorships

## Assessments

### Suggested Formative/Summative Classroom Assessments

- Timelines, Maps, Charts, Graphic Organizers
- Teacher-created Unit Assessments, Chapter Assessments, Quizzes
- Teacher-created DBQs, Essays, Short Answer
- Accountable Talk, Debate, Oral Report, Role Playing, Think Pair, and Share
- Projects, Portfolio, Presentations, Prezi, Gallery Walks
- Homework
- Concept Mapping
- Primary and Secondary Source analysis
- Photo, Video, Political Cartoon, Radio, Song Analysis
- Create an Original Song, Film, or Poem
- Glogster to make Electronic Posters
- Weebly to create a Website/Online Portfolio

## Interdisciplinary Connections

### English Language Arts

- Close reading of industry-related content
- Create a brochure for a specific industry

### Social Studies

- Research the history of a given industry/profession
- Research prominent historical individuals in a given industry/profession

### World Language

- Translate industry-content
- Create a translated index of industry vocabulary

### Math

- Research industry salaries for a geographic area and juxtapose against local cost of living
- Track and track various data, such as industry's impact on the GDP, career opportunities or among of individuals currently occupying careers

### Fine & Performing Arts

- Create a poster recruiting young people to focus their studies on a specific career or industry
- Design a flag or logo to represent a given career field

### Science

- Research the environmental impact of a given career or industry
- Research latest developments in industry technology
- Investigate applicable-careers in STEM fields

## **New Jersey Student Learning Standards**

### **8.2 Technology Education, Engineering, Design, and Computational Thinking**

- 8.2.12.A.1: Propose an innovation to meet future demands supported by an analysis of the potential full costs, benefits, trade-offs and risks, related to the use of the innovation.
- 8.2.12.A.2: Analyze a current technology and the resources used, to identify the trade-offs in terms of availability, cost, desirability and waste.
- 8.2.12.A.3: Research and present information on an existing technological product that has been repurposed for a different function.
- 8.2.12.B.1: Research and analyze the impact of the design constraints (specifications and limits) for a product or technology driven by a cultural, social, economic or political need and publish for review.
- 8.2.12.B.2: Evaluate ethical considerations regarding the sustainability of environmental resources that are used for the design, creation and maintenance of a chosen product.
- 8.2.12.C.6: Research an existing product, reverse engineer and redesign it to improve form and function.
- 8.2.12.D.1: Design and create a prototype to solve a real world problem using a design process, identify constraints addressed during the creation of the prototype, identify trade-offs made, and present the solution for peer review.

### **9.3 Career and Technical Education: Information Technology Career Cluster**

- 9.3.IT.6: Describe trends in emerging and evolving computer technologies and their influence on IT practices.
- 9.3.IT.7: Perform standard computer backup and restore procedures to protect IT information.
- 9.3.IT.8: Recognize and analyze potential IT security threats to develop and maintain security requirements.
- 9.3.IT.9: Describe quality assurance practices and methods employed in producing and providing quality IT products and services.
- 9.3.IT.10: Describe the use of computer forensics to prevent and solve information technology crimes and security breaches.
- 9.3.IT-SUP.1: Provide technology support to maintain service.
- 9.3.IT-SUP.3: Apply appropriate troubleshooting techniques in resolving computer hardware, software and configuration problems.

- 9.3.IT-SUP.4: Perform installation, configuration and maintenance of operating systems.
- 9.3.IT-SUP.9: Employ technical writing and documentation skills in support of an information system.

## **Common Career Technical Core (CCTC)**

### **Career Cluster Education & Training**

TI 01 – Demonstrate effective professional communication skills and practices that enable positive customer relationships.

- TI 01.1 – Demonstrate knowledge of organization's offerings and of customers' importance to the organization.

TI 02 – Use product or service design processes and guidelines to produce a quality information technology (IT) product or service.

- TI 02.2 – Identify and implement new products/services.

TI 06 – Describe trends in emerging and evolving computer technologies and their influence on IT practices.

- TI 06.1 – Identify new technologies.

TI 07 – Perform standard computer backup and restore procedures to protect IT information.

- TI 07.1 – Explain the need for regular backup procedures.
- TI 07.2 – Configure, perform and maintain backup procedures.

TI 08 – Recognize and analyze potential IT security threats to develop and maintain security requirements.

- TI 08.1 – Assess security threats.
- TI 08.2 – Implement plans to address security procedures.

TI 10 – Describe the use of computer forensics to prevent and solve information technology crimes and security breaches.

- TI 10.3 – Identify criminal activity in relationship to cybercrime, the Internet and Internet trafficking.

TI 12 – Compare key functions and applications of software and determine maintenance strategies for computer systems.

TI – SUP 04 – Perform installation, configuration and maintenance of operating systems.

- TI – SUP 04 .1 – Demonstrate knowledge of Operating System components in the building and deployment of computer systems.
- TI – SUP 04 .2 – Demonstrate knowledge of Operating System components in the repair and maintenance of computer systems.

TI – SUP 07 – Employ system installation and maintenance skills to set-up and maintain an information system.

- TI – SUP 07 .1 – Describe the life cycle of an information system.
- TI – SUP 07 .2 – Manage backup and recovery, both on- and off-site.
- TI – SUP 07 .3 – Troubleshoot problems.
- TI – SUP 07 .4 – Evaluate problem-solving processes and outcomes.

## **Common Core State Standards**

### **English Language Arts**

#### **Key Ideas and Details:**

- CCSS.ELA-LITERACY.RI.11-12.3 Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.

#### **Text Types and Purposes:**

- CCSS.ELA-LITERACY.W.11-12.2 Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

## **Mathematics**

#### **Building Functions:**

- CCSS.MATH.CONTENT.HSF.BF.A.1.A  
Determine an explicit expression, a recursive process, or steps for calculation from a context.

#### **Modeling with Geometry:**

- CCSS.MATH.CONTENT.HSG.MG.A.1  
Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).\*

<p><b>Course:</b> C-ROM</p> <p><b>Unit:</b> III – Computer System Repair and Upgrade Issues</p> <p><b>Grade Level:</b> 9-12</p>	<p><b>Unit Overview:</b></p> <p>Unit 3 will provide students with an understanding of the different operating systems used in computers, phones, and tablets. Then students will explore backup and upgrade procedures. Finally, students will explore different viruses, their history and how they affect computers.</p>
<p><b>New Jersey Student Learning Standards (NJSLS):</b> 8.2.12.A.1, 8.2.12.A.2, 8.2.12.A.3, 8.2.12.B.1, 8.2.12.B.2, 8.2.12.C.6, 8.2.12.D.1, 9.3.IT.6, 9.3.IT.7, 9.3.IT.8, 9.3.IT.9, 9.3.IT.10, 9.3.IT-SUP.1, 9.3.IT-SUP.3, 9.3.IT-SUP.4, 9.3.IT-SUP.9</p>	
<p><b>Common Career Technical Core (CCTC):</b> TI 01.1, TI 02.2, TI 06.1, TI 07.1, TI 07.2, TI 08.1, TI 08.2, TI 10.3, TI 12, TI – SUP 04 .1, TI – SUP 04 .2, TI – SUP 07 .1, TI – SUP 07 .2, TI – SUP 07 .3, TI – SUP 07 .4</p>	
<p><b>Common Core State Standards (CCSS):</b> RI.11-12.3, W.11-12.2, HSF.BF.A.1.A, HSG.MG.A.1</p>	

Student Learning Objectives (SLOs)	Essential Questions	Skills & Indicators	Sample Activities	Resources
<p>Compare different operating systems on different platforms. Demonstrate knowledge of upgrading operating systems.</p> <p><b>NJSLS:</b> 9.3.IT.6, 9.3.IT-SUP.3, 9.3.IT-SUP.4, 9.3.IT-SUP.9</p> <p><b>CCTC:</b> TI 06.1, TI 12, TI – SUP 04 .1, TI – SUP 04 .2</p>	<p>What makes a Mac look different from a PC?</p> <p>How come there are different commands on the keyboard of a Mac than that of a PC?</p> <p>How can you upgrade your operating system?</p> <p>How can you install a new operating system?</p>	<ul style="list-style-type: none"> <li>▪ Identify different operating systems.</li> <li>▪ Identify the purpose of an operating system.</li> <li>▪ Understand how to install a new operating system.</li> <li>▪ Understand how to upgrade an operating system.</li> <li>▪ Identify the importance of upgrading an</li> </ul>	<p><b>Graphic Organizer</b>            MAC vs PC: Students create a poster comparing MAC and PC, and concluding which they think is more superior.</p> <p><b>Apple vs Samsung</b>            Research the different operating systems and identify the differences/limitations of each.</p>	<p><b>Timeline of OS</b>  <a href="http://www.computerworld.com/article/2531905/operating-systems/timeline--40-years-of-os-milestones.html">http://www.computerworld.com/article/2531905/operating-systems/timeline--40-years-of-os-milestones.html</a></p> <p><b>Video: OS</b>  <a href="https://www.youtube.com/watch?v=pTdSs8kQqSA">https://www.youtube.com/watch?v=pTdSs8kQqSA</a></p> <p><b>Video: OS</b>  <a href="https://www.youtube.com/watch?v=5AjReRMoG3Y">https://www.youtube.com/watch?v=5AjReRMoG3Y</a></p> <p><b>Teacher Resource</b></p>



Student Learning Objectives (SLOs)	Essential Questions	Skills & Indicators	Sample Activities	Resources
<p><b>CCSS:</b> RI.11-12.3, W.11-12.2, HSG.MG.A.1</p>		<p>operating system.</p> <ul style="list-style-type: none"> <li>▪ What are the general shapes associated with Apple/Windows?</li> </ul>	<p><b>History of OS</b> Create a timeline of the Windows OS history.</p> <p><b>Create an App</b> Create a app for a smartphone that would be useful to students. What OS would it use? How much storage would it take? What would the interface look like?</p>	<p><a href="http://codex.cs.yale.edu/avi/os-book/OS9/practice-exer-dir/2-web.pdf">http://codex.cs.yale.edu/avi/os-book/OS9/practice-exer-dir/2-web.pdf</a></p> <p><b>Video: History of OS</b> <a href="https://www.youtube.com/watch?v=BTQ6HtCkSBQ">https://www.youtube.com/watch?v=BTQ6HtCkSBQ</a></p>
<p>Understand how to perform a backup on a computer.</p> <p><b>NJSLS:</b> 9.3.IT.7, 9.3.IT.9, 9.3.IT-SUP.1, 9.3.IT-SUP.9</p> <p><b>CCTC:</b> TI 07.1, TI 07.2, TI – SUP 07 .2, TI – SUP 07 .3, TI – SUP 07 .4</p> <p><b>CCSS:</b> RI.11-12.3, W.11-12.2</p>	<p>What can you do if your computer is acting strange?</p> <p>What preventative measures can you take to make sure you don't lose important files on your computer?</p> <p>How would you perform a backup?</p> <p>Why is a computer backup so important?</p>	<ul style="list-style-type: none"> <li>▪ Understand the importance of performing backups.</li> <li>▪ Demonstrate how to perform a backup.</li> <li>▪ Understand how often a backup should be done.</li> <li>▪ Identify different environment backups can be done.</li> <li>▪ Understand manual vs automatic backups.</li> <li>▪ Understand limitations of clone</li> </ul>	<p><b>Perform a Backup</b> Students perform a backup on an internal drive and on a cloud.</p> <p><b>Graphic Organizer</b> Students identify pros and cons on setting backups on your internal drive vs an external drive/cloud.</p> <p><b>Reflection</b> Reflect on a time when you lost data whether it was on your part, a</p>	<p><b>Video: Types of Backups</b> <a href="https://www.youtube.com/watch?v=Vjd6c7wdOhI">https://www.youtube.com/watch?v=Vjd6c7wdOhI</a></p> <p><b>Storing Your Data</b> <a href="http://data-archive.ac.uk/create-manage/storage/back-up">http://data-archive.ac.uk/create-manage/storage/back-up</a></p> <p><b>Teacher Resource</b> <a href="http://www.shutha.org/digital-storage#overview">http://www.shutha.org/digital-storage#overview</a></p> <p><b>Teacher Resource</b> <a href="https://www.crashwhite.com/apcompsci/materials/assign">https://www.crashwhite.com/apcompsci/materials/assign</a></p>

Student Learning Objectives (SLOs)	Essential Questions	Skills & Indicators	Sample Activities	Resources
		drive backup.	software crash or a hardware crash. What could have been some things that you could have done to retrieve that information.	<a href="#">ments/activities/activity-backups.pdf</a>
<p>Demonstrate how to perform a system restore and understand a system lifecycle.</p> <p><b>NJSLS:</b> 9.3.IT.7, 9.3.IT.9, 9.3.IT-SUP.1, 9.3.IT-SUP.3, TI – SUP 07 .1</p> <p><b>CCTC:</b> TI 07.1, TI 07.2</p> <p><b>CCSS:</b> RI.11-12.3, W.11-12.2, HSF.BF.A.1.A</p>	<p>How does a system restore affect my personal documents?</p> <p>Would a system restore remove viruses?</p> <p>Where does a system restore take information from?</p> <p>What determines where it is restoring to?</p> <p>How often should you create a restore point?</p>	<ul style="list-style-type: none"> <li>▪ Understand pros and cons of a system restore.</li> <li>▪ Understand when to perform a system restore.</li> <li>▪ Perform a system restore.</li> <li>▪ Undo a system restore.</li> </ul>	<p><b>Perform a System Restore</b> Students perform a system restore on their workstation.</p> <p><b>Web Graph</b> Draw the lifecycle of a system.</p> <p><b>Graphic Organizer</b> Students identify pros and cons of a system restore.</p>	<p><b>Restore Video</b> <a href="https://www.youtube.com/watch?v=52KltqIIHOI">https://www.youtube.com/watch?v=52KltqIIHOI</a></p> <p><b>System Lifecycle</b> <a href="http://www.thomastallis.greewich.sch.uk/gcse/gcseict3/online/artlcin.htm">http://www.thomastallis.greewich.sch.uk/gcse/gcseict3/online/artlcin.htm</a></p> <p><b>Resource</b> <a href="http://www.howtogeek.com/howto/windows-vista/using-windows-vista-system-restore/">http://www.howtogeek.com/howto/windows-vista/using-windows-vista-system-restore/</a></p>
<p>Understand different viruses, how they work, and how to prevent viruses.</p> <p><b>NJSLS:</b> 9.3.IT.8, 9.3.IT.10</p>	<p>How does a virus work?</p> <p>What are some ways you can load a virus on your computer?</p> <p>What are some ways you</p>	<ul style="list-style-type: none"> <li>▪ Identify different viruses.</li> <li>▪ Identify different Anti-virus programs.</li> <li>▪ Identify different purposes of a virus.</li> </ul>	<p><b>Cost Analysis</b> Compare different Anti-virus software in the market and find the yearly price. Which is best for the cost?</p>	<p><b>Teacher Resource</b> <a href="https://educators.brainpop.com/bp-topic/computer-viruses/">https://educators.brainpop.com/bp-topic/computer-viruses/</a></p> <p><b>Viruses Video</b> <a href="https://www.youtube.com/w">https://www.youtube.com/w</a></p>

Student Learning Objectives (SLOs)	Essential Questions	Skills & Indicators	Sample Activities	Resources
<p><b>CCTC:</b> TI 08.1, TI 08.2, TI 10.3</p> <p><b>CCSS:</b> RI.11-12.3, W.11-12.2, HSF.BF.A.1.A</p>	<p>can avoid viruses?</p> <p>What are some purposes of a virus?</p> <p>What is cyber hacking?</p> <p>How might an attacker spread their malware?</p>	<ul style="list-style-type: none"> <li>▪ Identify different tips to prevent viruses.</li> <li>▪ Differentiate between worms, Trojans, and viruses.</li> <li>▪ Understand repercussions of cyber hacking and pirating.</li> </ul>	<p><b>Digital Poster</b> Create a poster that gives your peers tips of how to avoid viruses online.</p> <p><b>Graphic Organizer</b> Students identify differences between different kinds of malware.</p>	<p><a href="#">atch?v=c34QwtYl40g</a></p> <p><b>Viruses Video</b> <a href="https://www.youtube.com/watch?v=n8mbzU0X2nQ">https://www.youtube.com/watch?v=n8mbzU0X2nQ</a></p> <p><b>Teacher Resource</b> <a href="http://www.hackerhighschool.org/lessons/HHS_en6_Hacking_Malware.v2.pdf">http://www.hackerhighschool.org/lessons/HHS_en6_Hacking_Malware.v2.pdf</a></p>
<p>Understand troubleshooting tips and beep codes.</p> <p><b>NJSLS:</b> 9.3.IT.9, 9.3.IT-SUP.1, 9.3.IT-SUP.3, 9.3.IT-SUP.4, 9.3.IT-SUP.9</p> <p><b>CCTC:</b> TI – SUP 04 .1, TI – SUP 04 .2, TI – SUP 07 .4</p> <p><b>CCSS:</b> RI.11-12.3, W.11-12.2</p>	<p>What part of the computer makes sure everything is functioning correctly?</p> <p>What does a single beep from your computer mean?</p> <p>How does your computer communicate that there is an issue?</p>	<ul style="list-style-type: none"> <li>▪ Understand connection between BIOS and beep codes.</li> <li>▪ Understand the blue/black screen that comes up on a computer.</li> <li>▪ How to translate beep codes.</li> <li>▪ Understand ways troubleshoot issues given by beep codes.</li> </ul>	<p><b>Research</b> Students research BIOS, CMOS, and POST and explain what each does.</p> <p><b>Digital Poster</b> Create a poster that explains the different functions of BIOS, CMOS, and POST.</p> <p><b>Access BIOS Menu</b> Students find where to access BIOS menu.</p>	<p><b>Beep Codes</b> <a href="http://www.computerhope.com/beep.htm">http://www.computerhope.com/beep.htm</a></p> <p><b>Video: BIOS Explained</b> <a href="https://www.youtube.com/watch?v=zIYkol851dU">https://www.youtube.com/watch?v=zIYkol851dU</a></p> <p><b>Teacher Resource</b> <a href="http://www.howtogeek.com/175649/what-you-need-to-know-about-using-uefi-instead-of-the-bios/">http://www.howtogeek.com/175649/what-you-need-to-know-about-using-uefi-instead-of-the-bios/</a></p> <p><b>Teacher Resource</b> <a href="http://bths.enschool.org/.../auto/.../A_%20Fall%202010%20Lesso">bths.enschool.org/.../auto/.../A_%20Fall%202010%20Lesso</a></p>

Student Learning Objectives (SLOs)	Essential Questions	Skills & Indicators	Sample Activities	Resources
<p>Understand the steps required to download/uninstall a software program.</p> <p><b>NJSLS:</b> 9.3.IT.9, 9.3.IT-SUP.3, 9.3.IT-SUP.4</p> <p><b>CCTC:</b> TI 12</p> <p><b>CCSS:</b> RI.11-12.3, W.11-12.2</p>	<p>How do you download a program?</p> <p>What differentiated downloading from installing?</p> <p>How can you remove a program from your computer?</p> <p>How can uninstalling a program change your computer?</p>	<ul style="list-style-type: none"> <li>▪ Understand concepts such as upload, download, install, and uninstall.</li> <li>▪ Know where to find downloads.</li> <li>▪ Know where to find installed programs.</li> <li>▪ Know how to uninstall a program.</li> </ul>	<p><b>Download/Install a Program</b> Students download and install a program like Windows Movie Maker or Unity 3D.</p> <p><b>Uninstall a Program</b> Students uninstall a downloaded program like Windows Movie Maker or Unity 3D.</p> <p><b>Create a Path</b> Students create their own path of where the install shows on the computer.</p>	<p><a href="#">n%2014%20 BIOS .doc</a></p> <p><b>Teacher Resource</b> <a href="http://www.itma.vt.edu/courses/complit/lesson2.htm">http://www.itma.vt.edu/courses/complit/lesson2.htm</a></p> <p><b>Teacher Resource</b> <a href="http://searchnetworking.techtarget.com/definition/downloading">http://searchnetworking.techtarget.com/definition/downloading</a></p> <p><b>Video: Uninstalling a Program</b> <a href="https://www.youtube.com/watch?v=UmlHUmc7qU4">https://www.youtube.com/watch?v=UmlHUmc7qU4</a></p>
<p>Understand how technologies are being reinvented.</p> <p><b>NJSLS:</b> 8.2.12.A.1, 8.2.12.A.2, 8.2.12.A.3, 8.2.12.B.1, 8.2.12.B.2, 8.2.12.C.6, 8.2.12.D.1</p>	<p>How did tablets come about?</p> <p>When was the first tablet created?</p> <p>Why does a new phone come out every year?</p> <p>How can companies predict what</p>	<ul style="list-style-type: none"> <li>▪ Understand history of tablets.</li> <li>▪ Reinvent a current technology</li> <li>▪ Identify factors that affect the creation of today's tablets/phones/computers.</li> </ul>	<p><b>Reinvent a Phone/Computer</b> Reinvent a current phone/table/computer in the market and tell why you made those changes.</p> <p><b>How Tablets Changed</b></p>	<p><b>Video: Evolution of Tablets</b> <a href="https://www.youtube.com/watch?v=AlfIHcRKwsc">https://www.youtube.com/watch?v=AlfIHcRKwsc</a></p> <p><b>Video: Business without Borders</b> <a href="https://www.youtube.com/watch?v=0S481K7mhBQ">https://www.youtube.com/watch?v=0S481K7mhBQ</a></p>

Student Learning Objectives (SLOs)	Essential Questions	Skills & Indicators	Sample Activities	Resources
<p><b>CCTC:</b> TI 01.1, TI 02.2, TI 06.1</p> <p><b>CCSS:</b> RI.11-12.3, W.11-12.2</p>	<p>functionalities people need in their phones/tablets?</p> <p>How does price play a part in consumer purchases of tablets/computers/phones?</p>	<ul style="list-style-type: none"> <li>▪ Understand the effects of technology on business.</li> </ul>	<p><b><u>the World</u></b> How did tablets come about and how did they change the world, daily life, and businesses.</p> <p><b><u>History of Tablets</u></b> Create a timeline of the history of tablets.</p> <p><b><u>Innovate</u></b> Create an invention of the future.</p>	<p><b><u>Video</u></b> <a href="https://www.youtube.com/watch?v=QnUztQc3TTA">https://www.youtube.com/watch?v=QnUztQc3TTA</a></p> <p><b><u>Documentary</u></b> <a href="https://www.youtube.com/watch?v=E03HFA923kw">https://www.youtube.com/watch?v=E03HFA923kw</a></p> <p><b><u>Future Inventions Video</u></b> <a href="https://www.youtube.com/watch?v=SunagFnKwfM">https://www.youtube.com/watch?v=SunagFnKwfM</a></p>

## Unit 3 Vocabulary

Automatic Backup  
Backup  
Beep Codes  
BIOS  
Bot  
Clone Drive  
Cyber Hacktivism  
DOS  
Download  
Install  
iOS  
Linux  
MAC

Malware  
Manual Backup  
Operating Systems  
PC  
Restore Point  
System Restore  
Trojan  
UEFI  
Upload  
Uninstall  
Unix  
Virus  
Windows  
Worm

## Suggested Unit Projects

*Choose At Least One*

<p>Have students create a prototype of product, draw plans and then use a computer program to create the product. In addition, students can use a 3D Printer to demonstrate their completed project to the class.</p>	<p>Have students create a invention for the future. It will fulfill a need of society and will use future technologies. Student will draw plans for the technology and write a 2 page summary of the product.</p>
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## Suggested Structured Learning Experiences

<p>InfoAge                  2201 Marconi Road                  Wall, New Jersey  <a href="http://infoage.org/wp/infoage/exhibits/">http://infoage.org/wp/infoage/exhibits/</a></p> <p>Liberty Science Center                  Liberty State Park                  222 Jersey City Boulevard                  Jersey City, NJ 07305                  Phone: 201-200-1000  <a href="http://lsc.org/">http://lsc.org/</a></p>	<p>Military Technology Museum of New Jersey                  2201 Marconi Rd                  Wall, New Jersey                  Phone: 330-703-9902  <a href="http://militarytechnj.wixsite.com/main/home">http://militarytechnj.wixsite.com/main/home</a></p>
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