Department of College and Career Readiness

Transportation and Society Curriculum

5.0 Credits

Unit One
Transportation and Society

Course Description
Transportation and Society is offered to tenth and eleventh grade students. The course is intended as a wide-ranging overview of the field of transportation incorporating such different fields as transport geography, automobile safety, aviation design and history to environmentally sustainable transport.
# Transportation and Society

## Pacing Guide

<table>
<thead>
<tr>
<th>Unit</th>
<th>Topic</th>
<th>Suggested Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 1</td>
<td>Navigation and Transport Geography</td>
<td>approx. 9 weeks</td>
</tr>
<tr>
<td>Unit 2</td>
<td>Automobile and Traffic Safety</td>
<td>approx. 8 weeks</td>
</tr>
<tr>
<td>Unit 3</td>
<td>Aviation and the Aviation Industry: Theory and History</td>
<td>approx. 9 weeks</td>
</tr>
<tr>
<td>Unit 4</td>
<td>Environmental Impact of Transportation and Sustainability</td>
<td>approx. 9 weeks</td>
</tr>
</tbody>
</table>
Educational Technology Standards


- **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.

<table>
<thead>
<tr>
<th>CRP1. Act as a responsible and contributing citizen and employee</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CRP2. Apply appropriate academic and technical skills.</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CRP3. Attend to personal health and financial well-being.</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CRP4. Communicate clearly and effectively and with reason.</th>
</tr>
</thead>
<tbody>
<tr>
<td>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 individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CRP5. Consider the environmental, social and economic impacts of decisions.</th>
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</thead>
<tbody>
<tr>
<td>Career-ready individuals understand the interrelated nature of their actions and regularly make decisions that positively impact and/or</td>
</tr>
</tbody>
</table>
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 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

<table>
<thead>
<tr>
<th>Time/General</th>
<th>Processing</th>
<th>Comprehension</th>
<th>Recall</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Extra time for assigned tasks</td>
<td>- Extra Response time</td>
<td>- Precise step-by-step directions</td>
<td>- Teacher-made checklist</td>
</tr>
<tr>
<td>- Adjust length of assignment</td>
<td>- Have students verbalize steps</td>
<td>- Short manageable tasks</td>
<td>- Use visual graphic organizers</td>
</tr>
<tr>
<td>- Timeline with due dates for reports and projects</td>
<td>- Repeat, clarify or reword directions</td>
<td>- Brief and concrete directions</td>
<td>- Reference resources to promote independence</td>
</tr>
<tr>
<td>- Communication system between home and school</td>
<td>- Mini-breaks between tasks</td>
<td>- Provide immediate feedback</td>
<td>- Visual and verbal reminders</td>
</tr>
<tr>
<td>- Provide lecture notes/outline</td>
<td>- Provide a warning for transitions</td>
<td>- Small group instruction</td>
<td>- Graphic organizers</td>
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<tr>
<td></td>
<td>- Reading partners</td>
<td>- Emphasize multi-sensory learning</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assistive Technology</th>
<th>Tests/Quizzes/Grading</th>
<th>Behavior/Attention</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Computer/whiteboard</td>
<td>- Extended time</td>
<td>- Consistent daily structured routine</td>
<td>- Individual daily planner</td>
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<tr>
<td>- Tape recorder</td>
<td>- Study guides</td>
<td>- Simple and clear classroom rules</td>
<td>- Display a written agenda</td>
</tr>
<tr>
<td>- Spell-checker</td>
<td>- Shortened tests</td>
<td>- Frequent feedback</td>
<td>- Note-taking assistance</td>
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<tr>
<td>- Audio-taped books</td>
<td>- Read directions aloud</td>
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<td>- Color code materials</td>
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</tbody>
</table>
## 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
- Tumblr to create a Blog
### Interdisciplinary Connections

#### English Language Arts
- Journal writing
- Close reading of industry-related content
- Create a brochure for a specific industry
- Keep a running word wall of industry vocabulary

#### Social Studies
- Research the history of a given industry/profession
- Research prominent historical individuals in a given industry/profession
- Use historical references to solve problems

#### World Language
- Translate industry-content
- Create a translated index of industry vocabulary
- Generate a translated list of words and phrases related to workplace safety

#### Math
- Research industry salaries for a geographic area and juxtapose against local cost of living
- Go on a geometry scavenger hunt
- 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

- 9.3.12.TD.1 Describe the nature and scope of the Transportation, Distribution & Logistics Career Cluster and the role of transportation, distribution and logistics in society and the economy.

- 9.3.12.TD.2 Describe the application and use of new and emerging advanced techniques to provide solutions for transportation, distribution and logistics problems.

- 9.3.12.TD.3 Describe the key operational activities required of successful transportation, distribution and logistics facilities.

- 9.3.12.TD.4 Identify governmental policies and procedures for transportation, distribution and logistics facilities.

- 9.3.12.TD.5 Describe transportation, distribution and logistics employee rights and responsibilities and employers’ obligations concerning occupational safety and health.

- 9.3.12.TD.6 Describe career opportunities and means to achieve those opportunities in each of the Transportation, Distribution & Logistics Career Pathways.

- 9.3.12.TD MTN.1 Develop preventative maintenance plans and systems to keep facility and mobile equipment inventory in operation. 9.3.12.TD MTN.2 Design ways to improve facility and equipment system performance.

- 9.3.12.TD HSE.1 Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces.

- 9.3.12.TD HSE.2 Develop solutions to improve performance of health, safety and environmental management services.

- 9.3.12.TD LOG.1 Develop solutions to provide and manage logistics services for the company and customers.

- 9.3.12.TD LOG.2 Analyze and improve performance of logistics systems to provide logistics planning and management services.

- 9.3.12.TD SAL.1 Analyze the ongoing performance of transportation, logistics and distribution related sales and service operations.
• 9.3.12.TD SAL.2 Demonstrate the use of sales and ongoing service of products and services that are transportation related to promote development of existing and future clients and customers.

• 9.3.12.TD OPS.1 Develop and evaluate transportation plans to move people and/or goods to meet customer requirements.

• 9.3.12.TD OPS.2 Analyze performance of transportation operations in order to improve quality and service levels and increase efficiency.

• 9.3.12.TD OPS.3 Comply with policies, laws and regulations in order to maintain safety, security and health and mitigate the economic and environmental risk of transportation operations.

• 9.3.12.TD SYS.1 Develop plans to maintain and/or improve the transportation infrastructure.

• 9.3.12.TD SYS.2 Assess, plan and manage the implementation of transportation services.

• 9.3.12.TD SYS.3 Describe ways to improve the system utilization, flow, safety and environmental performance of transportation systems.

• 9.3.12.TD WAR.1 Demonstrate efficient and effective warehouse and distribution center operations.

• 9.3.12.TD WAR.2 Describe ways to improve the performance of warehouse and distribution operations.

• 9.3.12.TD WAR.3 Analyze compliance with company policies and government laws and regulations in warehouse and distribution operations.
Common Career Technical Core (CCTC)

- **TD.1** Describe the nature and scope of the Transportation, Distribution & Logistics Career Cluster and the role of transportation, distribution and logistics in society and the economy.

- **TD.2** Describe the application and use of new and emerging advanced techniques to provide solutions for transportation, distribution and logistics problems.

- **TD.3** Describe the key operational activities required of successful transportation, distribution and logistics facilities.

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- **TD SAL.1** Analyze the ongoing performance of transportation, logistics and distribution related sales and service operations.
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• **TD WAR.2** Describe ways to improve the performance of warehouse and distribution operations.

• **TD WAR.3** Analyze compliance with company policies and government laws and regulations in warehouse and distribution operations.
Common Core State Standards (CCSS)

CCSS - English-Language Arts

Key Ideas and Details:
• CCSS.ELA-LITERACY.RL.11-12.1 Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
• CCSS.ELA-LITERACY.RL.11-12.2 Determine two or more themes or central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to produce a complex account; provide an objective summary of the text.

Craft and Structure:
• CCSS.ELA-LITERACY.RL.11-12.5 Analyze how an author’s choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning as well as its aesthetic impact.

Integration of Knowledge and Ideas:
• CCSS.ELA-LITERACY.W.11-12.1 Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
• CCSS.ELA-LITERACY.W.11-12.1.B Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the

Production and Distribution of Writing:
• CCSS.ELA-LITERACY.W.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
• CCSS.ELA-LITERACY.W.11-12.5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (Editing for conventions should demonstrate command of Language standards 1-3 up to and including grades 11-12 here.)

Research to Build and Present Knowledge:
• CCSS.ELA-LITERACY.W.11-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
Range of Writing:
• CCSS.ELA-LITERACY.W.11-12.10 Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences

Common Core State Standards (CCSS)
CCSS - Mathematics

Summarize, represent, and interpret data on a single count or measurement variable:
• CCSS.MATH.CONTENT.HSS.ID.A.1 Represent data with plots on the real number line (dot plots, histograms, and box plots).
• CCSS.MATH.CONTENT.HSS.ID.A.2 Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.
• CCSS.MATH.CONTENT.HSS.ID.A.4 Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.

Summarize, represent, and interpret data on two categorical and quantitative variables:
• CCSS.MATH.CONTENT.HSS.ID.B.5 Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data

Make inferences and justify conclusions from sample surveys, experiments, and observational studies:
• CCSS.MATH.CONTENT.HSS.IC.B.3 Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.
• CCSS.MATH.CONTENT.HSS.IC.B.4 Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.
• CCSS.MATH.CONTENT.HSS.IC.B.6 Evaluate reports based on data.
### Course:
Transportation and Society

### Unit:
1 – Navigation, Transport Geography and Global Trade

### Grade Level:
9-12

### Unit Overview:
A brief overview of mapping skills and navigation, an introduction into the principles of Transport Geography and how it impacts global trade

### New Jersey Student Learning Standards (NJSLS):
- 6.1.4.B.1
- 6.1.4.B.3
- 6.1.4.B.10
- 6.1.8.B.1.b
- 6.1.8.C.1.b
- 6.1.8.C.2.c
- 9.3.12.TD.1
- 9.3.12.TD.2
- 9.3.12.TD.3
- 9.3.12.TD LOG.1
- 9.3.12.TD LOG.2
- 9.3.12.TD OPS.1
- 9.3.12.TD SYS.1
- 9.3.12.TD SYS.2

### Common Career Technical Core (CCTC):
- TD - SAL.1
- TD - SAL.2
- TD - OPS.1
- TD - OPS.2
- TD - OPS.3
- TD - SYS.1
- TD - SYS.2
- TD - SYS.3
- TD - WAR.1
- TD - WAR.2
- TD - WAR.3

### Common Core State Standards (CCSS):
- RL.9-10.1
- RI.9-10.5
- SL.9-10.1
- SL.9-10.4
- SL.9-10.5
- SL.9-10.6
- L.9-10.1
- L.9-10.2
- W.9-10.2
- W.9-10.5
- W.9-10.6
- W.9-10.7
- W.9-10.8
- W.9-10.10

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<table>
<thead>
<tr>
<th>Student Learning Objectives (SLOs)</th>
<th>Essential Questions</th>
<th>Skills &amp; Indicators</th>
<th>Sample Activities</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lesson One</strong></td>
<td></td>
<td></td>
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<tr>
<td>Students will be able to...</td>
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</tr>
<tr>
<td>Be able to identify the symbols on a highway map.</td>
<td>How did you travel in the pre-GPS or IPhone era?</td>
<td>• Create travel instructions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Determine several travel routes from one location to another using a road map.</td>
<td>How can a map be sued to navigate from one location to another?</td>
<td>• Identify map symbols</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Create a map using a</td>
<td>How are maps created? How is listening different from hearing?</td>
<td>• Plan a travel route using a map</td>
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<tr>
<td></td>
<td></td>
<td>• Identify geographic features on a map</td>
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<tr>
<td></td>
<td></td>
<td>• Use spatial awareness to create maps</td>
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</tbody>
</table>

**Writing Activity**
Write a travel narrative of the student’s route from home to school

**Map Activity**
Using road maps students will determine a route from one specific location to the other identifying routes, direction and distance. Activity will be done first

**Teaching with Maps**

**Where is Here?**
[https://www.ion.org/outreach/upload/lesson1.pdf](https://www.ion.org/outreach/upload/lesson1.pdf)
<table>
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</thead>
<tbody>
<tr>
<td>grid pattern</td>
<td>Why is following clear directions important?</td>
<td>● Create maps using established symbols</td>
<td>using Interstate Highways, second using local road and a third time identifying key features along the way</td>
<td></td>
</tr>
<tr>
<td>Create maps using common map symbols and students own special perceptions of their environment</td>
<td></td>
<td></td>
<td>Using a Grid Pattern, create a map of the classroom followed by a set of instructions determining the route from one place to another in the room.</td>
<td></td>
</tr>
<tr>
<td>NJSLS: 6.1.4.B.1; 6.1.4.B.3; 6.1.4.B.10; 6.1.8.B.1.b; 9.3.12.TD.2</td>
<td></td>
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<tr>
<td>CCTC: TD.1; TD.3;</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>CCSS: RL.9-10.1; RI.9-10.5; SL.9-10.1</td>
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<td></td>
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</tr>
<tr>
<td><strong>Lesson Two</strong>&lt;br&gt;Students will be able to....</td>
<td>Where is your location on the globe? Explain how a flat grid (map) and a spherical grid (globe) differ? Why is Polaris (the North Star) the only star that does not move in the night sky? How can the angle of Polaris determine latitudinal position? How does a compass</td>
<td>● Use geographic coordinates to locate a position&lt;br&gt; ● Find the North Star&lt;br&gt; ● Use the angle of Polaris to establish a location on a map/globe&lt;br&gt; ● Use a compass to determine direction&lt;br&gt; ● Plot a course of Travel</td>
<td><strong>Puzzle Activity</strong>&lt;br&gt;Solve the following Puzzle: An explorer walked one mile south, one mile east, one mile north, and came back to the original point. Where did this happen?</td>
<td><strong>How to be a Great Navigator!</strong>&lt;br&gt;<a href="https://www.ion.org/outreach/upload/lesson2.pdf">https://www.ion.org/outreach/upload/lesson2.pdf</a></td>
</tr>
<tr>
<td>Demonstrate an understanding of Latitude and Longitude and the Prime Meridian</td>
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<tr>
<td>Explain the usefulness of the North star in geography</td>
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<tr>
<td>Explain how magnetic north and true north</td>
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**Compasses and Magnetism**<br>http://beam.berkeley.edu/sites/default/files/Magnetism%20Lesson%20Plan.pdf
<table>
<thead>
<tr>
<th>Student Learning Objectives (SLOs)</th>
<th>Essential Questions</th>
<th>Skills &amp; Indicators</th>
<th>Sample Activities</th>
<th>Resources</th>
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</thead>
<tbody>
<tr>
<td>differ.</td>
<td>work</td>
<td>●Use human movement in a region or the globe to analyze history</td>
<td>Create compasses and using those compasses identify the key points on a compass Plot a course of travel using only known direction and time traveled (dead reckoning)</td>
<td>Dead Reckoning - the basics <a href="https://www.youtube.com/watch?v=Ahroe-DidO8">https://www.youtube.com/watch?v=Ahroe-DidO8</a></td>
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<tr>
<td>Navigate a course using traditional methods</td>
<td>What is the difference between true North and Magnetic North What is “Dead Reckoning?”</td>
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<td><strong>NJSLS:</strong> 6.1.4.B.1; 6.1.4.B.3; 6.1.4.B.10; 6.1.8.B.1.b:</td>
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<td><strong>CCTC:</strong> TD.3; TD.4</td>
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<td><strong>CCSS:</strong> RL.11-12.7</td>
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<td><strong>Lesson Three</strong> Students will be able to....</td>
<td>Explain how transportation adds value to goods or people? Why did the Romans build roads in the empire? Why did China build canals? How did ocean currents and winds determine trade patterns?</td>
<td>●Use maps to identify transportation networks through out history ●Identify the limits of past technologies ●Identify the role of weather and climate in the history of transportation.</td>
<td>Research Activities Conduct internet research explain the role of Roman roads and Chinese canals enable expansion, control and economic development within each empire. Use the Internet to identify the characteristics and limitation of 16th through 18th century sailing vessels</td>
<td>Roman Road Network <a href="https://people.hofstra.edu/geotrans/eng/ch2en/conc2en/romannet.html">https://people.hofstra.edu/geotrans/eng/ch2en/conc2en/romannet.html</a> China's Grand Canal System <a href="https://people.hofstra.edu/geotrans/eng/ch2en/conc2en/grandcanal.html">https://people.hofstra.edu/geotrans/eng/ch2en/conc2en/grandcanal.html</a> North Atlantic Trade Patterns 18th Century <a href="https://people.hofstra.edu/geotrans/eng/ch2en/conc2en/tradewinds.html">https://people.hofstra.edu/geotrans/eng/ch2en/conc2en/tradewinds.html</a></td>
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<td>Identify how transportation permitted human movement around the globe Explain the role of transportation in the Roman and Chinese Empires Analyze the role of wind and ocean currents in creating pre-modern global trade patterns, ie</td>
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<tr>
<td>the Triangular Trade</td>
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<td>Use maps of ocean currents and prevailing winds, along with charts of available goods in each region; create a map of 17th and 18th century global trade patterns.</td>
<td>Sailing Through History [link]</td>
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<td>CCTC: TD.1; TD.2</td>
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<td><strong>Lesson Four</strong></td>
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<td><strong>Students will be able to...</strong></td>
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<td>Identify the core factors in the geography of transportation.</td>
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<td>Identify the historical, social and political aspects of transportation</td>
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<td>Explain the role of cost in determining why something is transported.</td>
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<td>Explain the concept of friction in transportation</td>
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<td>The Romans built roads to enable their armies to move quickly and strengthen their empire. Do we have anything equal today that accomplishes the same thing? Explain how transportation adds value to goods or people? 100 years ago most food and consumer items were produced locally or within the nation. What proof do you have that this is not true today?</td>
<td>●Write in an instructional format (step by step) ●Categorize the core factors in transportation geography ●Use economic analysis to determine the viability of long distance transport</td>
<td><strong>Writing Activity</strong> Write out the steps that pair of sneakers takes to get from its place of origin and your the consumer in the U.S. Identify each of the core concepts of transportation in each the steps listed</td>
<td><strong>Writing step by step instructions</strong> [link]</td>
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<td><strong>Research Activity</strong></td>
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<td>Using the internet, compare the cost of shipping a T-Shirt from Bangladesh with that of a car from Japan. What % of the cost is transportation for each</td>
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<td><strong>Planet Money Makes a T-Shirt</strong> [link]</td>
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<td><strong>Main Maritime Shipping Routes</strong></td>
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<td>[link]</td>
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<td><strong>Main Maritime Shipping Routes</strong> [link]</td>
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</table>
| **Lesson Five**  
Students will be able to...  
Explain the how the earth creates physical constraints in transportation  
Identify the categories of constraints in transportation  
Identify the primary physical constraints faced by global transportation.  
**NJSLS:** 6.1.12.B.6.a; 9.3.12.TD.2; 9.3.12.TD.3; 9.3.12.TD.4  
**CCTC:** TD.2; TD.3; TD.4 | How does the term “friction in transportation” relate to its use in science?  
Explain the difference between physical and man-made constraints in transportation?  
What are the benefits of direct routes in transportation?  
How do political boundaries become constraints to transportation? | ●Geographical analysis based on map reading  
●Research skills – identify and analyze trade restrictions | **Map Activities**  
Looking at a globe or atlas what route would a ship loaded with oil need to take to go from Kuwait to Tokyo, to Lima Peru, to New York. What physical constraints does this ship encounter?  
**Research Activity**  
Using the Internet research the customs barriers imposed on trade goods using the points of departure and destination in the above activity  
**Venn Diagram**  
Compare and contrast physical made man- | **Maritime Transportation Rates for a 40 Foot Container between Selected Ports**  
https://people.hofstra.edu/geotrans/eng/ch7en/conc7en/map_container_shipping_rates.html  
**What is Global Trade?**  
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<td><strong>Lesson Six</strong></td>
<td>Explain the role of geographical constraints in a sea voyage</td>
<td>Made constants to transportation</td>
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<td>Students will be able to...</td>
<td>Explain the role of engineering in changing global trade?</td>
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<td>Explain how containerization has changed global shipping.</td>
<td>Explain how the Suez Canal and the Panama Canal change the pattern of global shipping?</td>
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<tr>
<td>NJSLS: 6.1.12.B.6.a; 9.3.12.TD.2; 9.3.12.TD.3</td>
<td>How did the shipping container change global shipping?</td>
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<tr>
<td>CCTC: TD.1; TD.3; TD SAL.1; TD WAR.2</td>
<td>Why does ocean going transportation tend to stay close to the equator while air transport tends to go over the north pole?</td>
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<tr>
<td></td>
<td>How did the shipping container change global shipping?</td>
<td>Compare man made with natural chokepoints</td>
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</table>

**Outside Research Activity**
Keep a journal of local trucks seen with shipping containers. What type of container? Shipping company? Possible origin? Compile class journals create a chart. What does this tell us about connections to global trade in the area.

**Cooperative Research Activity**
Research “chokepoints” in global transportation. (e.g. Strait of Malacca vs. Panama Canal)

**Map Activity**
Create two maps of global trade, before and after Suez and Panama Canals.
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<tr>
<td><strong>Lesson Seven</strong>&lt;br&gt;Students will be able to...&lt;br&gt;Identify the concept of a land bridge&lt;br&gt;Explain how the North American Land bridge is capable of bypassing the Panama Canal&lt;br&gt;Explain the cost efficiencies of intermodal transportation?</td>
<td>What is a transportation landbridge?&lt;br&gt;What is meant by intermodal?&lt;br&gt;What technologies are necessary for intermodal transportation?&lt;br&gt;How can intermodal transportation overcome physical constraints to transportation?</td>
<td>● Math skills – calculate the amount and speed carried over the North American landbridge&lt;br&gt;● Map skills – identify key transport hubs needed for the landbridge to work&lt;br&gt;● Compare cost and speed of transport via Panama Canal versus North American Landbridge</td>
<td><strong>Map Activity</strong>&lt;br&gt;Using maps identify the different portions of the North American landbridge? What cities become will become the key transport hubs?&lt;br&gt;<strong>Research Activity</strong>&lt;br&gt;Contact intermodal transportation forms and research available jobs and skills necessary for employment in the industry</td>
<td><a href="https://www.youtube.com/watch?v=-qXmPj1xKPE">Intermodal Freight – Animation</a>&lt;br&gt;<a href="https://www.youtube.com/watch?v=EkY04jkgRqo">Time Lapsed Intermodal hub</a>&lt;br&gt;<a href="https://people.hofstra.edu/geotrans/eng/ch3en/appl3en/usalandbridge.html">The North American Landbridge</a></td>
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<td><strong>NJSLC</strong>&lt;br&gt;9.3.12.TD&lt;br&gt;SYS.1; 9.3.12.TD&lt;br&gt;SYS.2; 9.3.12.TD SYS&lt;br&gt;CCTC: TD.1; TD.2; TD&lt;br&gt;MTN.2; TD LOG.2; TD&lt;br&gt;OPS.1&lt;br&gt;CCSS: RL11-12.7</td>
<td><strong>Lesson Eight</strong>&lt;br&gt;Students will be able to...Research a large scale engineering project designed and built to overcome a physical constraint in</td>
<td>What constitutes a physical constraint to transportation?&lt;br&gt;Whose interests were served by building projects to overcome</td>
<td><strong>Research Project</strong>&lt;br&gt;Students will select a large-scale engineering project (bridge, tunnel, canal, railroad, etc.) for research, need to detail</td>
<td><a href="http://tryengineering.org/lessons/pipelinechallenge.pdf">Pipeline Challenge</a>&lt;br&gt;<a href="http://tryengineering.org/lessons/pipelinechallenge.pdf">Transportation: Past</a></td>
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<td>● Analytic skills – determine the scope of change to trade brought to trade by the project&lt;br&gt;● Research skills</td>
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<tr>
<td>transportation (bridge, tunnel, canal, railroad, etc.)</td>
<td>constraints? How was trade (local, regional, national or global changed by engineering projects to overcome physical constraints? Was this project built for political, economic or social reasons? Did this engineering project have political implications</td>
<td>●Public speaking ●Create a graphic presentation.</td>
<td>history, engineering, economic value and role in trade. <strong>Cooperative Activity</strong> Create a series of maps over time showing how different large scale transportation projects altered global trade and politics <strong>Individual research activity</strong> Locate a part of the globe where a physical constraint prevents the ordinary flow of transportation such as mountain ranges, continents, narrow strips of land. Research and describe the engineering accomplishment overcame that physical constraint.</td>
<td>Present and Future <a href="https://www.thehenryford.org/docs/default-source/default-document-library/default-document-library/transportation-systems-digitkit.pdf?sfvrsn=0">https://www.thehenryford.org/docs/default-source/default-document-library/default-document-library/transportation-systems-digitkit.pdf?sfvrsn=0</a> <strong>Panama Canal Expansion</strong> <a href="https://www.youtube.com/user/PanamaCanalOnline">https://www.youtube.com/user/PanamaCanalOnline</a> <strong>Suez Canal Expansion</strong> <a href="https://www.youtube.com/watch?v=r7gj7Evn_dE">https://www.youtube.com/watch?v=r7gj7Evn_dE</a></td>
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**NJSLS:** 9.3.12.TD SYS.1; 9.3.12.TD SYS.2; 9.3.12.TD SYS

**CCTC:** TD.1; TD.3; TD SAL.1; TD WAR.2

**CCSS:** RL11-12.7

Compile that research into a display and written response

Present that research and finding to the class.

For more information, please visit the following resources:

- [https://www.youtube.com/user/PanamaCanalOnline](https://www.youtube.com/user/PanamaCanalOnline)
- [https://www.youtube.com/watch?v=r7gj7Evn_dE](https://www.youtube.com/watch?v=r7gj7Evn_dE)
# Unit 1 Vocabulary

<table>
<thead>
<tr>
<th>Map key</th>
<th>transport friction</th>
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<tbody>
<tr>
<td>topographical map</td>
<td>geographical constraints</td>
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<td>latitude</td>
<td>chokepoint</td>
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<td>Longitude</td>
<td>strait</td>
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<td>Prime Meridian</td>
<td>containerization</td>
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<td>Polaris</td>
<td>Great Circle Route</td>
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<td>GPS</td>
<td>logistics</td>
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<td>Dead reckoning</td>
<td>Intermodal transportation</td>
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<td>currents</td>
<td>North American Land Bridge</td>
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<td>prevailing winds</td>
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<tr>
<td>canal</td>
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<td>Interstate highways</td>
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</table>
### Suggested Unit Projects

**Choose At Least One**

| Identify and Research an ongoing local transportation project (Highway project, bridge, rail extension. Contact and interview the engineers and planners. | Using the tracking information from a shipped package (shipped via UPS or Fed Ex) create a narrative of the journey taken by the parcel. Using research information from the shipper, detail the transportation modes, infrastructure, flow and network used to ship the package. |

### Suggested Structured Learning Experiences

| Railroad Museum of Pennsylvania  
300 Gap Road, Ronks, PA 17572  
Newark International Airport  
Port Authority of New York & New Jersey  
Newark International Airport  
Newark, NJ 07114  
[http://www.fieldtrip.com/nj/19616264.htm](http://www.fieldtrip.com/nj/19616264.htm)  
Aviation Hall of Fame of New Jersey  
400 Fred Wehran Drive  
Teterboro, New Jersey 07608  
2 DeKorte Park Plaza, Lyndhurst, NJ 07071  