



**Learning About
Semiconductor
Technology**

CHIP IN: ROADTRIP NATION VIEWER'S GUIDE

VARIOUS GRADE LEVELS

For more information on Ignited, visit:
<https://igniteducation.org>

For more information on SEMI and
SEMI Foundation, visit: <https://www.semi.org>



POWERED BY

California Community Colleges





Chip In - Roadtrip Nation Viewers Guide

What career path works for you?



Lesson Overview

Students will use their own interests and skills to explore various careers in the semiconductor industry and what pathways are available to them to attain a job in this field.

Essential Questions

1. What careers are out there?
2. What steps do I take to pursue this career pathway?

Mission Prep

Engage (5 mins)

Warm-Up

Ask students to respond to the following questions:

- What do you want to be when you grow up?
- How do you plan to get there?

Explore (10 mins)

Interests Job Match tool

- Have students navigate to SEMI Foundation's website and complete the [Interests Job Match](#)

Launch

Explain (25 - 50 mins)

Watch [Chip In - Road Trip Nation](#)

Note: There are two 25 minute episodes. Both episodes follow three roadtrippers as they interview individuals in the semiconductor industry to learn about their career paths. Each episode can be watched as stand alone video segments or can be watched together as one full experience.

There are four discussion questions spaced throughout each episode for which the teacher may opt to pause the video to prompt student engagement; alternatively all four could be discussed after the episode concludes.

- Episode 1: Leading Edge (25 mins)

Synopsis:

0 - 10:30 mins: Episode 1 begins by introducing the viewer to three roadtrippers, shares their recent background studies in STEM fields, and sets the stage for their upcoming road trip together.

Class Discussion Question #1: If you had the opportunity to interview someone in the semiconductor industry, what would you ask them? What would you want to learn from them?

10:30 - 15:30 mins: The road trip begins in Austin, TX where they interview a software engineer working for NVidia. She describes her job, her path to attaining this job, and the components that she weighed to settle on this path.

Class Discussion Question #2: The roadtrippers ask the NVIDIA software engineer about her decision making process for picking her job path. What factors do they discuss? In general, what factors are important to consider when choosing a career path?

16:15 - 18:00 mins: The roadtrippers visit TORCRobotics, a company working to create automated cargo trucks. They interview a Systems Integration Engineer who describes his job and his interest in this cutting edge technology.

Class Discussion Question #3: In these cutting edge fields, there is a lot to discover and develop. In order to be successful in these fields, what are [durable skills](#) that they share? What are other skills that would be helpful to develop to be able to thrive in this type of environment?

18:00 - 22:30 mins: At Austin Community College, they interview the Associate Dean of Advanced Manufacturing Programs who was an Electrical Engineer in Semiconductors and has now moved into education. She shares her unique pathway, as a female raised by a single mother without a mentor in the field. She now works to help community college students to develop skills to get into jobs with various levels of education.

Class Discussion Question #4: Laura Marmolejo, the Associate Dean of Advanced Manufacturing Programs at Austin Community College, said, "There is more than one way to have a successful career. Not everyone has to take one path." What does she mean by this? What potential paths have been presented in this episode?

● Episode 2: Making Micro (25 mins)

Synopsis:

0 - 5:00 mins: The roadtrippers have made it to San Diego. They interview the Group Lead for Quality and Continuous Improvement at ASML, a company that makes the machines that make the semiconductors. She explains the ubiquity of chips in our world. The roadtrippers get to tour the clean room. She shares her pathway, no engineer role models but liked math and science.

Class Discussion Question #1: The Group Lead for Quality and Continuous Improvement at ASML shares how she did not have any engineer role models. What about you? Do you have a path or is it wide-open? Do you like the idea of paving your own path? What is "authentically you?"

5:00 - 9:30 mins: Next, the roadtrippers visit Syntiant and interview the Director of Product Engineering. Syntiant is using AI technology to make neural decision processors. She shows the roadtrippers one of their developed technologies combining security cameras with heat sensitivity to identify human presence. The Product Engineer shares her experience as a female immigrant, traveling around the world, how it is challenging, validates their feelings of discomfort, but reinforces how to persevere through it.

Class Discussion Question #2: Roadtripper Alyssa shares her experience doubting herself in her role in the tech industry. What is imposter syndrome? Have you ever felt this way before? What strategies did you use to overcome this feeling?

12:00 - 15:30 mins: The roadtrippers make it to Synopsys in Sunnyvale, CA. They interview the Senior Manager of Corporate Applications Engineering. He shares his passion for engineering as applying math to solve problems, specifically big picture problems that the world needs solved. The roadtrippers ask him about his path and he explains that his was unusually straightforward; he is doing a job that combines all of the things that he went to school for. He follows this up by saying that most people do not have such a linear trajectory and that change is good. Most importantly he shared his passion, drive, and determination to change the world through engineering.

Class Discussion Question #3: While at Synopsys, they talk about how engineers in this field have the opportunity to solve some of the world's big problems. What are some of these problems that they might be referring to?

16:30 - 22:00 mins: They arrive in Portland, OR to interview the Co-Founder of QED Solutions, a cybersecurity company. He shares his experience working on a committee for the President of the United States and how it was a formative experience in his career. He shares his first introduction was his curiosity being piqued in video gaming. He again reiterates that it is not always a straight path and that it's okay to not know the next step. He shares that there are a range of educational backgrounds in his company from PhD to no degree. He emphasizes that it is most important to be passionate and curious about what you choose to be a part of.

Class Discussion Question #4: When the Senior Manager at Synopsys talks about his pathway, he mentions that it has been his dream and desire ever since he was in school. The Co-Founder of QED Solutions mentions that it was not a clear straight path for him. What is your current dream job? What classes do you need to take in order to meet the requirements for that job?

Elaborate (40 mins)

Episode 1 Discussion Questions

1. If you had the opportunity to interview someone in the semiconductor industry, what would you ask them? What would you want to learn from them?
2. The roadtrippers ask the NVIDIA software engineer about her decision making process for picking her job path. What factors do they discuss? In general, what factors are important to consider when choosing a career path?
3. In these cutting edge fields, there is a lot to discover and develop. In order to be successful in these fields, what are [durable skills](#) that they share? What are other skills that would be helpful to develop to be able to thrive in this type of environment?

4. Laura Marmolejo, the Associate Dean of Advanced Manufacturing Programs at Austin Community College, said, “There is more than one way to have a successful career. Not everyone has to take one path.” What does she mean by this? What potential paths have been presented in this episode?

Episode 2 Discussion Questions

1. The Group Lead for Quality and Continuous Improvement at ASML shares how she did not have any engineer role models. What about you? Do you have a path or is it wide-open? Do you like the idea of paving your own path? What is “authentically you?”
2. Roadtripper Alyssa shares her experience doubting herself in her role in the tech industry. What is imposter syndrome? Have you ever felt this way before? What strategies did you use to overcome this feeling?
3. While at Synopsys, they talk about how engineers in this field have the opportunity to solve some of the world’s big problems. What are some of these problems that they might be referring to?
4. When the Senior Manager at Synopsys talks about his pathway, he mentions that it has been his dream and desire ever since he was in school. The Co-Founder of QED Solutions mentions that it was not a clear straight path for him. What is your current dream job? What classes do you need to take in order to meet the requirements for that job?

Exploration

Evaluate (25 mins)

Career Poster

- Have students revisit their Interest Job Match Survey results (or careers that popped up during the Chip In episodes that sound interesting) and select one career that seems intriguing to learn more about. The [SEMI Career Explorer](#) site is helpful here.
- While reading the SEMI career profiles, students should locate the following information:
 - Job tasks and responsibilities
 - Specific job skills
 - Academic pathway
- Students can create Career Profile Posters with this information using [this template](#).

Extend (Optional)

- Students can watch [videos](#) of people in their chosen semiconductor-related careers.
- Students can post their Career Profile Posters around the classroom.
- Either formally as a Gallery Walk or informally throughout the year, students can check out the various Career Profiles to learn from one another.

Resources

Chip In / Roadtrip Nation. (2023). Roadtripnation.com. <https://roadtripnation.com/roadtrip/microelectronics-documentary?tab=roadtrip>

The High Demand for Durable Skills. (2021). America Succeeds. <https://americasucceeds.org/wp-content/uploads/2021/04/AmericaSucceeds-DurableSkills-NationalFactSheet-2021.pdf>

Poster, P. (2019). *Career Profile Poster Template*. Google Docs. <https://docs.google.com/presentation/d/1dnSwPVPPMWKSiL-L6h4j92j1q6Io1RBRI8LcmeblhH0/edit#slide=id.p>

SEMI Careers. (2023). Semi.org. <https://careers.semi.org/job-match>