Standards Covered: (a), (b), (c)**,** (d)**,** (e)

Sequence:

1. Icebreaker, get to know everyone’s name and one of their interests, academic or extracurricular. See if anyone can remember everyone’s name and interest. *(10 min)*
2. Evaluate the following URLs as a group. Elect one person on the group to summarize what the URL was about. Use the questions as prompts to help you present your findings to the class. You may have to do additional research to answer some questions *(20 min, presentations 10 min)*
3. Group Discussion:
   1. What are some of the essential skills you need to have if you want to be a robotics engineer?
   2. What are some useful “tools” for developing robots? *(10 min)*
4. Video: What is it like to be a robotics engineer through the Darpa Robotics Challenge. Notice how they test the robot and how it is “tethered” to be controlled: *(10 min)* <https://www.youtube.com/watch?v=Gk_zADMORzo>
   1. Extra (If Interested): Automatons as the beginning of the robot renaissance: <https://www.youtube.com/watch?v=MZMeQI1V1Ow>

Group 1:

<http://www.princetonreview.com/careers/139/robotics-engineer>

<http://www.princetonreview.com/careers/139/robotics-engineer>

<http://www.princetonreview.com/careers/139/robotics-engineer>

1. What does it mean to be a robotics engineer?
2. What kinds of applications do we see robots in? And in what capacity?

-Agriculture

-Mining

-Nuclear power plant maintenance, and a variety of other fields

Group 2:

<http://study.com/articles/Robotics_Engineers_Information_About_Starting_a_Career_in_Robotic_Science_and_Robotic_Engineering.html>

“Robotics engineers should be highly creative, self-motivated individuals with an ability to think outside the box. Their advanced mathematics, applied physical science, and computer science skills should be solid, and they should enjoy collaborating with a team and be adept at communicating with others. Because the programming of new robots is considered by some to be the most challenging aspect of robotics engineering, particular expertise or a degree in software engineering is highly desirable and may expand a robotics engineer career options considerably.”

1. What does it mean to think outside of the box?
2. What does collaboration and “adept” communication mean?
3. What is programming? And do you know any programming languages? What are these languages used for?

Group 3:

<http://www.wired.com/2014/10/robotic-followers/>

[http://www.learnaboutrobots.com/roboticsEngineer.htmhttp://www.learnaboutrobots.com/roboticsEngineer.htm](http://www.learnaboutrobots.com/roboticsEngineer.htm)

“So you want to be a robotics engineer? Software engineering is probably the Achilles heel of robotics. The mechanical, electrical and computer engineers have built awesome machines, but they still are extremely difficult to put into production. This is because they are so difficult to teach. An expert technician `has to program the robot's every motion down to the tiniest minutia. In my opinion, the biggest contributions yet to be made in robotics will come from the software engineers. Companies are hiring robotics engineers to develop everything from automated vacuum cleaners to robot dogs.”

Group 4:

Robotics Companies to look at (evaluate):

[http://www.fanucamerica.com/http://www.fanucamerica.com/](http://www.fanucamerica.com/)

[http://www.adept.com/http://www.adept.com/](http://www.adept.com/)

[http://www.sarcos.com/http://www.sarcos.com/](http://www.sarcos.com/)

[http://www.kuka-robotics.com/usa/en/http://www.kuka-robotics.com/usa/en/](http://www.kuka-robotics.com/usa/en/)

<http://www.rethinkrobotics.com/>

1. What are some interesting “products” (robots) are produced by this company?
2. Do they have a flagship product?
3. How are they similar?
4. How are they different?

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