2501V Killer Vees

Career Readiness

Stem Career

Civil engineering is a stem career that I am interested in. A Civil engineer is someone that plans, directs, and supervises large construction projects.Most construction engineers specialize in a specific type of project such as commercial buildings, heavy highway, mechanical, or electrical systems. My plan is to do commercial engineering, such as office buildings, parking garages, and veterinary clinics.

Civil Engineering career path

1. Earn either a bachelor's or master's degree in an a desired engineering field.
2. Obtain your E.I.T. "Engineer In Training". You need an EIT to enter the construction engineering field.
3. Gain real life engineering experience in the field.
4. Apply for a professional engineer job.

Required skills for Engineering

- Management ability
- Analytical thinking
- Technical experience
- Communication skills
- Critical thinking
- Leadership
- Creative mind
- Negotiation abilities
- Attention to detail
- Time management
- Problem solving
- Visualisation skills
- Teamwork
- Passion for learning
- Enthusiasm and commitment
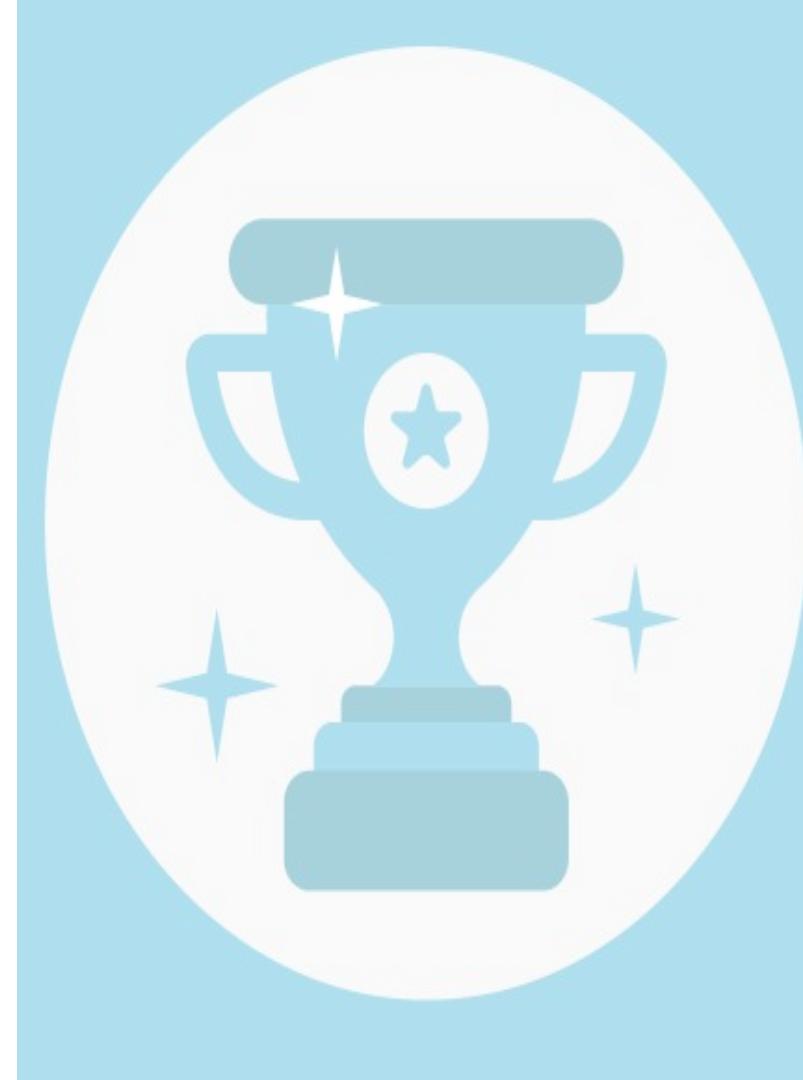
Communication and Negotiation skills

Communication is one of the most important skills, it is being able to listen objectively to other partners ideas and opinions. If you can't do that it will be hard for your team to get along. Another important skill is being able to see non verbal communication and responding accordingly.

The ability to negotiate allows two or more people to reach a compromise. On my team we use negotiation all the time, like if we are at a tournament we will negotiate on who will drive for normal matches and who will drive for finals. Another example is in the lab on whose idea we should use on a robot or what driving strategy we should try. Not everyone likes to do the notebook, we often have to negotiate on what days who will do the notebook.

Visual skills, and Attention to detail

Visualisation is the ability to create images in your mind. You can use this in robotics while you are brainstorming. You come up with an idea in your head. Then you create an example of the visualization design onto a piece of paper.
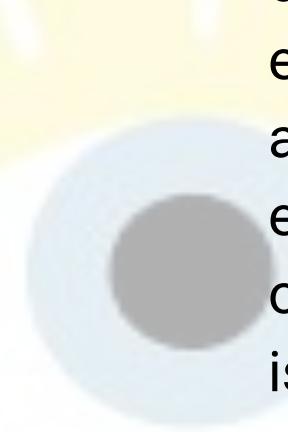
Attention to detail means throughout a task you have consistent awareness for everything going on. You need attention to detail in robotics to ensure your code, gears and pegs on your robot are built correctly. It is also important while you're driving to pay attention to everything that is happening on the field. As strategies can change in an instant.

Leadership and Management skills

An example of a leadership skill is awareness. At robotics competitions we have to be aware of where the other robot is, so we do not run into or get in the way of where it is trying to go. Especially in this game, we will need to be aware of the riser scoring zones. They can be very easily knocked over and if they fall out of the field they are gone for the entire match.

Management is the process of working with and through different situations. We practice team management in robotics by having one person manage the notebook or coding and we often change these roles. Doing this allows other people to help with other tasks. If you have one person writing down notes in the notebook and other teammates helping them come up with ideas it is more efficient. The same thing can be said with coding, you have one person taking the lead on adjusting the code and another person going to the field to test the code.

Passion for learning, enthusiasm, and commitment
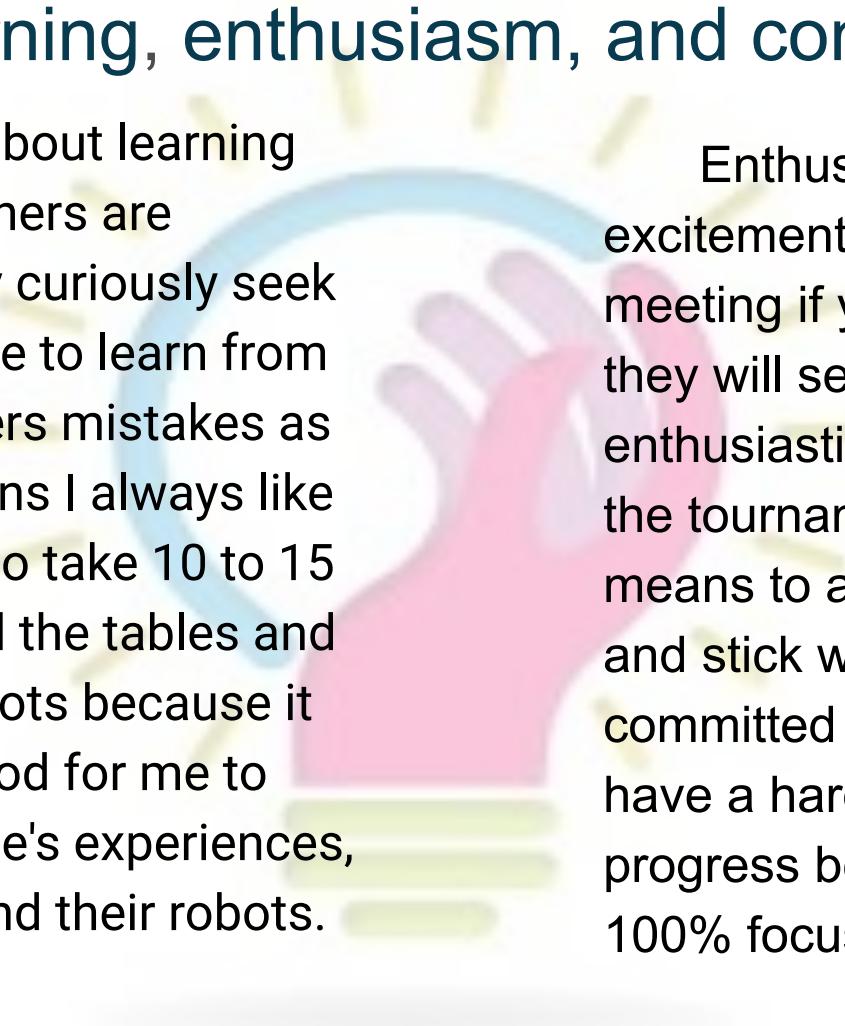
To be passionate about learning means passionate learners are engaged learners. They curiously seek knowledge. You are able to learn from your mistakes and others mistakes as well. During competitions I always like to watch matches. I also take 10 to 15 minutes to walk around the tables and look at all the other robots because it gives me ideas. It is good for me to learn about other people's experiences, their design process, and their robots.

Enthusiasm means to have excitement. During your judges meeting if you show excitement, they will see that you are enthusiastic about robotics and the tournament. Commitment means to agree to do something and stick with it. If you don't fully committed to something you will have a hard time making as much progress because you aren't 100% focused.

Critical thinking, and creative mind

A creative mind is able to see two or more ideas, and make something great out of it. An open mind is able to accept other people's ideas, and in order to have a creative mind you need to have an open mind. So to be a successful team you need both a creative and open mind.
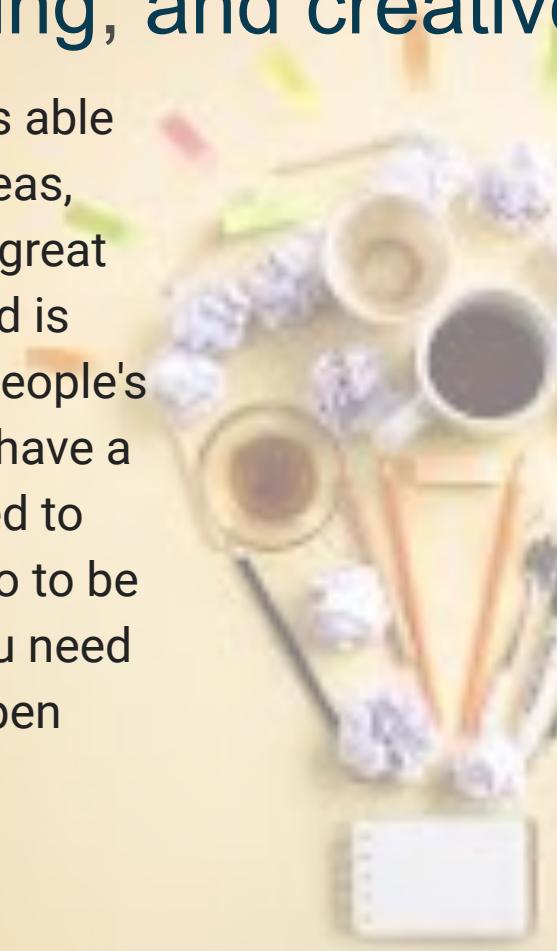
Critical thinking has many aspects but one of the main things is evaluation. That is to be able to look at something and figure out how to make improve it. For example last year for the VEX IQ challenge squared away we had a robot with one left that could pick up the green cubes and stack them on all three pedestals. The only problem was it was hard to take the colored cubes across the field in a short amount of time because you have to go back and forth, so we made a quick small secondary lift especially for the red and blue cubes.

Problem solving, and analytical thinking

The definition of problem solving is the process of finding solutions to difficult or complex problem. We use problem-solving skills in robotics a lot. For example our robot brakes in the middle of a match you need to think fast on how to put it back together. For another example you are at a tournament and your code for autonomous isn't working and you only have 2 more tries left so you must think fast.
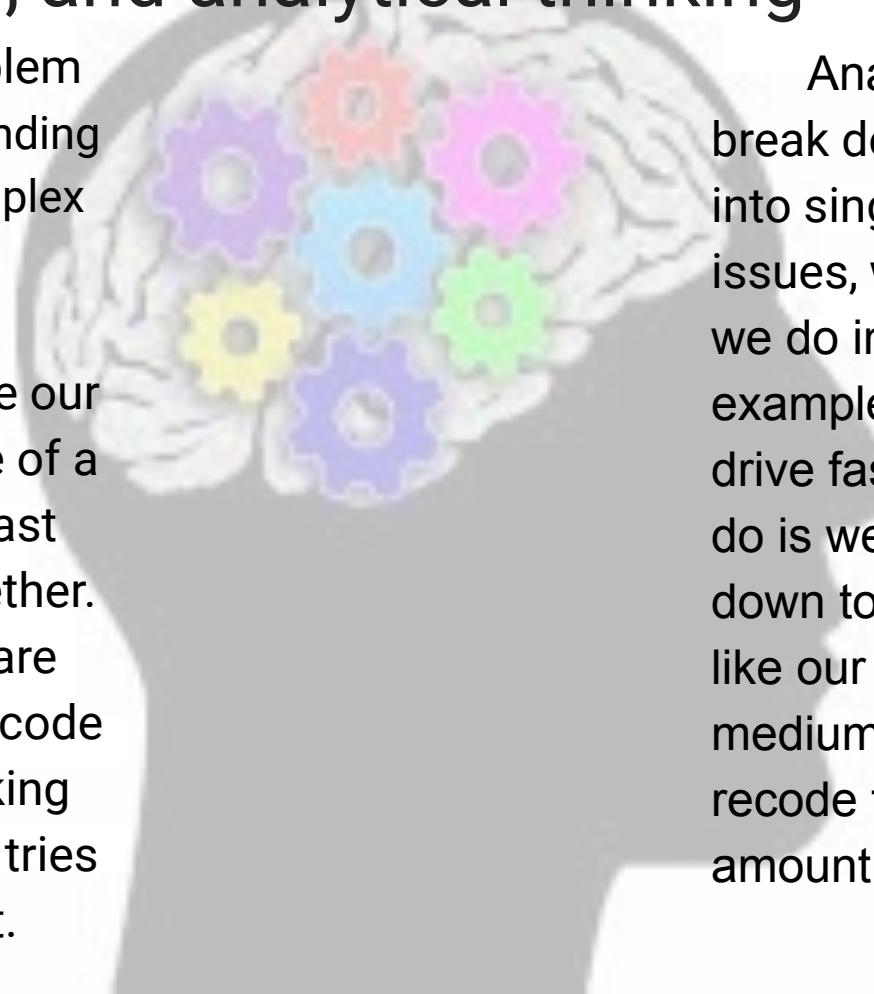
Analytical thinking is to break down big problems into single and manageable issues, which is exactly what we do in our notebook. For example our base does not drive fast enough, so would do is we would break break it down to manageable issues like our gear ratio should be medium to large, and we can recode the percentage amount of mph it can go.

Technical skills, time management, and teamwork

Some examples of technical skills are knowledge of programming languages, design programs, or mechanical equipment. We use robot pieces as our equipment, and block coding as programming languages. You can also use cad as a design program too.

Some good time management skills are Prioritization, Goal-setting, Planning. At the beginning of the robotics year you make a timeline to set goal deadlines for building periods and when we will stop brainstorming. You also need time management for each practice so you can still get work done and have the time to notebook about it as well.

I saved the last one for the most important teamwork! The definition of teamwork is People coming together completed tasks and we practice teamwork all the time at robotics. Whether we are working on a stem project or pairing up with another team during a match to try to get the most amount of points.

Citation Section

Name of Entrants: Alex Wunderlich, Alan Arthur, Jayden Fujii, Kloey Quicke-Milligan, Manny Brown, Tommy Harmon
Team Number: 2501V
Title: Career Readiness

Resources

1. https://www.careeraddict.com/top-10-skills-needed-for-a-job-in-civil-engineering

2. https://www.toureiffel.paris/en/news/130-years/who-was-gustave-eiffel#:~:text=Eiffel%20proved%20as%20skillful%20a,New%20York%2C%20the%20mobile%20dome

CAD:https://www.autodesk.com/products/fusion-360/overview?mktvar002=3529781|SEM|1618310854|97508940435|kwd-302547449455&gclsrc=aw.ds&&ef_id=EAIaIQobChMIq-mTuMOl6wIVDfDACh132g9IEAAYASAAEgJBUPD_BwE:G:s&s_kwcid=AL!11172!3!450016260449!b!!g!!3d%20modelling%20software%20free!1618310854!97508940435&mkwid=s|pcrid|450016260449|pkw|3d%20modelling%20software%20free|pmt|b|pdv|c|slid||pgrid|97508940435|ptaid|kwd-302547449455|pid|&utm_medium=cpc&utm_source=google&utm_campaign=GGL_DM_Fusion-360_AMER_US_Trials_SEM_NBR_NEW_EX_ADSK_3529781_&utm_term=3d%20modelling%20software%20free&utm_content=s|pcrid|450016260449|pkw|3d%20modelling%20software%20free|pmt|b|pdv|c|slid||pgrid|97508940435|ptaid|kwd-302547449455|&gclid=EAIaIQobChMIq-mTuMOl6wIVDfDACh132g9IEAAYASAAEgJBUPD_BwE