JULY 12-13

REC Foundation Coach Summit 2022
Join us for training and discussions so that you can learn more about us, and we can learn how to better support you!

Student Resources for Success
Dan Troy
Brandi Bolinger
Emily Bruning
BEFORE WE BEGIN

BEST PRACTICES

This is for YOU - the Coaches. Please ask questions when you have them.

- Utilize the Chat
- Share Pro Tips
- Take Breaks
- Ask Questions in the Chat
- Be Respectful
Resources that Coaches have available to help current students and alumni become more successful
**Dan Troy**  
Team Engagement Manager  
CT, DC, DE, MA, MD, NH, NJ, NY, PA, RI AND VT

Over 16 years of Competitive robotics experience  
VRC, VIQC, VEXU, FLL, Sea Perch and FRC  
Certified Educator in VEX GO, VEX IQ, VEX V5, and CS with VEXcode VR.  
Certified Volunteer in Head Referee (VIQC/VRC), Judge, and Event Partner  
Favorite Role Emcee/Play by Play  
Born and raised in Philadelphia

- dan_troy@roboticseducation.org

**Brandi Bolinger**  
Team Engagement Manager  
MI, IL, WI, MN, ND, SD, IA, AND NE

Robotics Coach, Mentor, Volunteer, and Event Partner  
Over 16 Years of Experience Coaching Competitive Robotics  
Co-Head Mentor for Team 2337 - The EngiNERDs  
VRC, VIQ Camps, FLL, FTC, FRC, OCCRA  
Certified Referee, Event Partner, and Judge  
Born and Raised in Mid-Michigan  
Specializing in Anything “Team” Related

- brandi_bolinger@roboticseducation.org
OnShape
- Why OnShape?
- Advantages
- Parts Library

Certifications
- Referee
- Drive Team
- Micro
- Workforce

Scholarships
- Where to find them
- Internships
DESIGNING WITH ONSHAPE

WHAT IS ONSHAPE?
An online, browser-based CAD (Computer Aided Design) software used to create digital models of robots and mechanisms.

WHY USE ONSHAPE?
- Free for Educators & Students
- Teacher/Coach Monitored
- Multiple users at once
- Version control
- Works on Chromebooks
- VEX Parts Libraries
- Great for Engineering Notebooks
ADVANTAGES OF USING **ONSHAPE**

**DIGITAL PARTS ARE FREE**
- Test proof of concept before purchasing
- Adjusting digital designs saves time
- Designs can be shared easily

**CREATING NO-CUT POLICY**
- Students MUST share an OnShape design
- Cutting marks MUST match the drawing
- Part should match part file
- Engineering Notebook entries made easy!

**VEX V5 PARTS LIBRARY**

- 13 Documents
- 100 Parts
  - 26+ configurable
- Each part has:
  - Appearances
  - Material / Weight
  - Part Number(s)
  - Link to purchasing page
- Contains all parts from the VEX Competition Super Kit + more
ACCESSING THE OFFICIAL PARTS LIBRARY

WHAT IS A PUBLIC PARTS LIBRARY?
- Pre-created items that are already designed
- Free to use and incorporate
- No need to recreate the wheel
- Official and Public Libraries available

ADDING THE PARTS LIBRARY
Watch this time stamped VIDEO for a tutorial!
- Click on Public Section
- Advanced Search
- Official VEX V5 Library
- Select All
- Create your own label for quick access
Certifications

The REC Foundation Certifications Program responds to a global need for more students in the Science, Technology, Engineering, and Mathematics (STEM) fields.

Judge/Event Partner  Drive Team/Referee  Industry/WorkForce  CMU - Micro
Head Referee & Drive Team

This certification is for students to test the student of their knowledge and to understand what the Head Referees are looking for.

Current Students
Can be used to train team members

After graduation
Can be used to help run/support/volunteer at events
The purpose of Judge Certification is to ensure a consistent judging process is followed at all VEX Robotics Competitions. The Judge Guide describes the judged award criteria and informs the Judges, Judge Advisor, and Event Partner on their roles and responsibilities in the judging process.

**Current Students**
Can be used to teach students the judging process and aid notebook development

**After graduation**
Can be used to help run/support/volunteer at events
SMART Micro-Certifications

There are 4 SMART Robotics Technician Micro-Certifications available that focus on different foundational competencies. Participants can opt to complete any number of them, based on their roles within their robotics team.

https://www.cmu.edu/roboticsacademy/roboticscurriculum/smart-microcertification-vrc.html
The Fabrication Foundations Micro-Certification covers cutting, measuring, drilling, and 3D printing which are commonly performed by technicians on robotics systems.

The Mechanical Foundations Micro-Certification covers structural design, weight distribution, drivetrains, fastening, and speed and torque which are common concepts robotics technicians need to understand.

The Robotics Integration Micro-Certification covers situations where technicians may receive a large industrial system that requires assembly and installation. Learners must provide evidence of unpacking and testing, testing navigation programming, and vision system integration.

The Software Foundations Micro-Certification covers all of the concepts that were covered in Robotics Integrations as well as programming sensors, and a vision system (or camera).
RECF Industry Certifications

The REC Foundation provides two industry certifications (Pre-Engineering and Robotics) for schools, students in engineering related programs, and robotics clubs. These certifications were designed by a team of accomplished professionals composed of engineers, college professors, and high school teachers.

Along with a team of professional engineers, college professors, and high school teachers, the REC Foundation created two industry certifications for students in engineering or robotics-related programs.

https://www.roboticseducation.org/educational-resources/industry-certifications/
Industry Certifications **Benefits**

01. **Workforce Development**
   - Prepare Students for Industry before they graduate high school

02. **School/Program Funding**
   - Many states provide funding for student-earned Industry Certifications

03. **CTE Instruction Validation**
   - Used as the end-of-course assessment for engineering, technology and robotics classes.
PATH TO CERTIFICATION

Pre-Engineering Certification

1. Fundamentals of Engineering
   Requires 70% or higher to pass.
   - 90 Minute Exam
   - Approximately 100 questions

2. Pass TWO Modules - Requires 70% or higher to pass.
   - 30 Minute Exam
   - Approximately 25-30 questions

* No Point System, each exam is Pass/Fail with a passing score of 70%.
PATH TO CERTIFICATION
Robotics Certification

1. Fundamentals of Engineering
   Requires 70% or higher to pass.
   - 90 Minute Exam
   - Approximately 100 questions

2. Pass THREE Specific Modules
   Mechanical, Electrical, and Programming Modules
   - 30 Minute Exam
   - Approximately 25-30 questions
**PATH TO CERTIFICATION**
Preparing Students for Success in a Changing World

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<tr>
<th>Modules</th>
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<tbody>
<tr>
<td>1. Manufacturing Technology</td>
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<td>2. Engineering Technology</td>
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<td>3. Mechanical</td>
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<td>4. Electrical</td>
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<td>5. Computer Science and Engineering (Programming)</td>
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<td>6. Chemical</td>
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<td>7. Aerospace</td>
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<td>8. Civil Engineering</td>
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STUDENT SUCCESS AFTER GRADUATING
Scholarships

Over 500 Scholarships worth a combined total of $40 Million!

By partnering with over 50 organizations, universities, and colleges to offer a scholarship program, the REC Foundation hopes to encourage students in our programs to continue their education and pursue careers in STEM.

https://www.roboticseducation.org/educational-resources/scholarships/
Internship Program

The REC Foundation provides resources that can help students identify meaningful internship opportunities that put classroom and competition skills to use in today’s workforce. Internships provide examples of what work in a particular field will be like and can help students build professional skills and network.

https://www.roboticseducation.org/internships/
THANK YOU

2022 REC FOUNDATION COACH SUMMIT