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!

20 EOUNDATION REC COACH

STRATEGY DICTATED DESIGN

BRANDI BOLINGER & DAN TROY

BEFORE WE BEGIN

BEST PRACTICES

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







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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



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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.

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ROBOTICS EDUCATION & COMPETITION FOUNDATION Inspiring students, one robot at a time.





CORE PRINCIPLES: STUDENT-CENTERED

Student-Centered Learning

Students are actively involved in learning opportunities to increase their knowledge and skills in the engineering design process, mechanical design, programming and teamwork under the guidance of adult mentorship.

Student-Centered Application

Students have ownership on how their robot is designed, built, programmed, and utilized in match play with other teams and Robot Skills matches.

Student Centered Policy



WE ARE NOT HERE TO:



DISCUSS GAME CALLS

Your Head Referee will make that decision based on the situation



DICTATE ROBOT DESIGN Each Team's goals and measurement of success SHOULD be different



BREAK THE GAME

Read the rules with the intention of following them, not breaking them

THE MAIN GOALS ARE TO:

TEACH CRITICAL THINKING

Use your role as a teacher or coach to guide students through the learning process



OFFER NEW PERSPECTIVES

What works for one, may not work for another. Steal from the best, and design the rest



Sometimes doing a little math can help you identify a strategy that you'd never considered before





"We are going to relentlessly chase perfection, knowing full well we will not catch it, because nothing is perfect.

But we are going to relentlessly chase it, because in the process we will catch excellence".

Vince Lombardi



WHAT IS A STRATEGY DICTATED DESIGN?





ASSESSING YOUR RESOURCES

When is your competition? How often do you meet? How long are your meetings?

TIME

TECHNOLOGY ACCESS

Devices per Person Internet - at home and robotics Familiarity with hardware & software

WORK FORCE

How many Students? How many dedicated Mentors? What is your Teacher & Staff Support? How much Parent involvement?



MATERIALS SUPPLY

Longer Shipping & Lead Times Product Availability Discontinuation of services Available Stockpile of Goods

BUDGET

Has your Sponsorship changed? Accounting for increased prices? Counting on Individual Contributions?

KNOWLEDGE & SKILLS

Disrupt in Transfer of Knowledge Mentor and Student Experience Machining, fabricating, Safety



UNDERSTANDING THE GAME EACH YEAR



What do the rules say?

Read the rules in a logical order and take notes for visual learners

What are you ALLOWED to do?

Some things are EXPLICITLY called out as allowable actions.





What are you PROHIBITED from doing?

Some things are EXPLICITLY called out as prohibited actions.

What don't the rules say?

Don't lawyer the rules! But, if it doesn't say you CAN'T, maybe you can?





Strategic Moves & Maneuvers

Game plays are NOT going to be called out it's up to you to develop them

Maximum Benefit Opportunities

Is there a "flow" that you can achieve to get the most out of each match?



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IDENTIFYING GAME PIECES AND TIMING



Types of Game Pieces

One or multiple types? Different or same values? How many of each type?

Access to Game Pieces

What are the starting locations? Physical access restrictions? Human-load vs on field? Are there possession limits? Can game pieces be reintroduced?

Match Breakdown

Autonomous bonus or Win Point? End Game bonus or Win Point? Access time limitations? Compounding Bonuses?



CALCULATING MAX SCORE AND CONTRIBUTION

Imaginary Game Example with Finite Scoring

Description	Accessed During	Quantity Available	Points per Action	Calculated Max Score	Contribution Percent of Total Max Score	Estimated Seconds per Action	Points Per Second
Movement Bonus	Autonomous	1*	5	5	4%	2	5 ÷ 2 = 2.50
Autonomous Bonus	Autonomous	1	10	10	8%	15	10 ÷ 15 = 0.67
Game Element A Scored	Drive Control	20	1	20	17%	8	1 ÷ 8 = 0.13
Game Element B Scored	Driver Control	2	15	30	25%	20	15 ÷ 20 = 0.75
Zone Possession Bonus	End Game	3	5	15	13%	5	5 ÷ 5 = 1.00
End Game Bonus	End Game	1*	40	40	33%	10	40 ÷ 10 = 4.00
TOTAL PER ROBOT				120			

Driver Control = 105 seconds

End

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Autonomous = 15 seconds

Game = 15 seconds*



FOCUS ON WHAT INSTEAD OF HOW

THINK ABOUT...

- What *can* a robot do?
- Words that generically *describe* a mechanism or function
- How to break down each *individual task* into smaller tasks
- What belongs *together*, and what are *stand-alone* tasks





DETERMINE YOUR OVERALL STRATEGIES

STEPS FOR STUDENT-CENTERED SUCCESS:

- Decide ahead of time digital or physical note-taking
- Designate a Scribe
- Begin leading the discussion to get the ball rolling
- Ask Students Open-Ended questions
- Have *students* populate the notes

- Write everything down, post it, and organize it *later*
- Keep the Students *organized* and *on-task*
- Don't give them the answers!
- If something is missing, *guide* them toward the answer
- Assist with "what not how" phrasing





REORGANIZING YOUR PRIORITIES

QUESTIONS TO ASK YOUR TEAM:

- Realistically, what does our time together allow us to build or accomplish?
- How will our budget affect our abilities?
- Do we have access to the physical resources to make/build/program this?
- Do we already have, or can we find people to help?
- Can to work in parallel, or do we need to work in series?





DETERMINING YOUR MATCH PLAY

THINGS TO CONSIDER:

- Are there designated scoring timeframes?
- How many times can you do the action?
- How many of each game piece are there?
- How many of each field element are there?
- What is your travel time?
- Can your efforts be unscored?
- Can you perform more than one action at a time?

YOUR CONTRIBUTION:

- What is the maximum score of each match?
- What percentage of the max points can you score?
- How many points per second are you scoring?
- What is your contingency plan?
- How are you going to coordinate with you Alliance Partners each match?
- Have you calculated your *actual* contribution?







TIPS FOR IMPLEMENTING SUCCESS

ENCOURAGE YOUR STUDENTS TO:

- Read the Game Manual- paying close attention to the red boxes
- Read the Game Manual AGAIN
- Evaluate your Team's resources
- Define Success for each individual and Team
- Check for Game Manual updates
- Read the Game Manual AGAIN
- Set and prioritize their strategic objectives
- Keep the priorities posted in a public place
- Refer back to priorities often
- Iterate, ITERATE, ITERATE!
- Commit to Continuous Improvement!

CATCHING EXCELLENCE

WHAT DOES SUCCESS LOOK LIKE?

ASK YOURSELF AND YOUR ORGANIZATION: "HOW CAN I CONTRIBUTE TO THE SUCCESS OF MY TEAM?"

ROLE OF THE STUDENTS:

- Set goals and measures of success
- Work toward achieving excellence
- Be the driving force of progress
- Build the Robot, document the process

ROLE OF THE COACHES AND MENTORS:

- Link the past and present
- Encourage Students
- Assist and enlist help when needed
- Share knowledge and skills
- Manage documents and respect privacy
- Assess resources and plan accordingly



THANK YOU

20 REC FOUNDATION COACH SUMMIT

COMING UP NEXT

THE SECRETS OF BECOMING A BETTER COACH

3:00PM

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