



CHAMPIONSHIP

Anoka, Minnesota

April 21, 2023

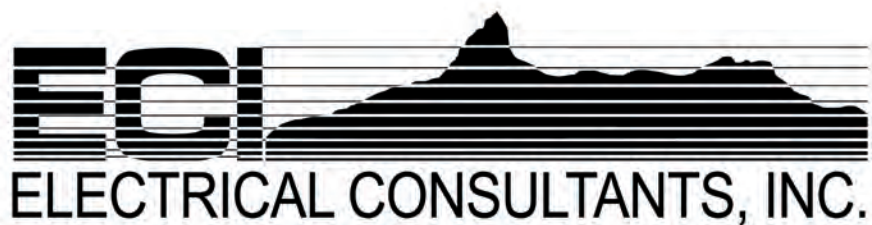


MINNESOTA STATE
Engineering Center of Excellence

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Welcome Message

The Minnesota State Engineering Center of Excellence is excited to offer the Engineering Machine Design Contest and Reverse Engineering Challenge programs as a fun and educational way to inspire youth to consider engineering and engineering-related career pathways.

This is the sixth year of existence of the Engineering Machine Design Contest and the third annual Championship event. Teams have advanced from regional contests across Iowa, Minnesota, and Wisconsin to compete for the title of Champion! We are excited to see how they have interpreted the theme of “**Into Orbit: Transforming Space Technology**” and how they have applied their knowledge of science, technology, engineering, and mathematics to their chain reaction machines.

This year we have added the Redesign Challenge to engage teams in a different way! With this being the first of its kind, we are excited to get your feedback, and are committed to providing a quality opportunity that all young people can participate in.

Please be sure to thank our host, Anoka Technical College, and their amazing Connections Coordinator, Rebecca Walker, for graciously hosting and supporting the 2023 Engineering Machine Design Championship! Today would not be a great success without their time and commitment to providing an exceptional experience for all of our participants.

We have been looking forward to this day and cannot wait to see it unfold.

Best of luck to ALL of the teams!



Melissa Huppert, PhD
Engineering Machine Design Contest Director
STEM Outreach Director

Minnesota State Engineering Center of Excellence

EMDC Advisory Committee

Dana McLaren | *Technology Education Teacher, New Berlin High School*

Paula Mortenson | *Physics and Chemistry Teacher, Southland High School*

Devin Schwiesow | *Science and Technology Teacher, St. Ansgar High School*

Sheila Miller | *Technology Coordinator, Blessed Maria Assunta Pallotta Catholic School*

Eric Kerr-Anderson | *Composite Materials Engineering Assistant Professor, Winona State University*

Melissa Huppert | *STEM Outreach Director, Minnesota State Engineering Center of Excellence*

Jennifer Peck | *PK12 STEM Consultant, CESA 10*

Jason Bruns | *Director, Minnesota State Engineering Center of Excellence*

Nora Gathje | *Science Teacher, Chatfield High School*

Schedule

7:30AM	8:45AM	Team Check-in Machine Unload Machine Pre-check	<i>Atrium Door S3 Main Hallway</i>
8:40AM	8:55AM	Last-minute Coach Meeting	<i>Classroom 172</i>
9:00AM	9:30AM	Welcome Session	<i>Auditorium</i>
10:00AM	12:30PM	Preliminary Round	<i>Main Hallway</i>
10:00AM	12:30PM	Lab Sessions	<i>Various Locations</i>
11:00AM	1:30PM	Lunch Available	<i>Outside Door S3</i>
12:30PM	1:00PM	General Session	<i>Auditorium</i>
1:00PM		Finalists Announced	<i>Auditorium</i>
1:00PM	4:00PM	Engineering Design Challenges	<i>Classroom 251</i>
1:20PM	4:00PM	Redesign Round	<i>Main Hallway</i>
1:30PM	4:00PM	Finals Round	<i>Main Hallway</i>
3:00PM		Special Awards Voting Ends	<i>Online</i>
4:00PM	6:00PM	Machine Removal	<i>Main Hallway</i>
4:30PM	5:30PM	Awards Ceremony	<i>Auditorium</i>

Food & Snacks



Café | 7:30AM – 1:30PM

The Fresh Stop Café will have a variety of meals and grab-and-go items for purchase. Meal vouchers are not valid at the café.



Lunch | 11:00AM – 1:30PM

Lunch will be provided by local food trucks! Checkout the menus near **Door S3**. Teams should use their meal voucher, while event spectators are welcome to purchase food. Folks are welcome to eat in the student center.

Event Photographer

Be on the lookout for our event photographers – smile and say “Cheese!”. Photos will be available on our website after the event. For those looking for a photo-op, a backdrop is available near the south entrance of the Auditorium.

Photographers

Kendall Thinnes | *Photographer*, Anoka High School
Spencer Saba | *Photographer*, Anoka High School

Activities & Resources

Morning Activity: Lab Sessions

The Anoka Technical College has put together a series of hand-on lab sessions in the morning for students to engage in! Each session is 25 minutes and everyone is welcome to participate. No sign-up is needed, just show up to the designated room at the start of the session time.

Session Time	Architecture Technology	CNC Machining	Information Technology (IT)
	Room 171	Room 223	Room 155
10:00AM	X	X	X
10:30AM	X	X	X
11:00AM	X	X	
11:30AM	X	X	
12:00PM	X	X	

Afternoon Activity: Engineering Design Challenges

Students can engage in a series of Engineering Design Challenges in the afternoon. This fun set of activities will push problem solving skills to the max! To add a little competition to the mix, students that complete all of the challenges will be eligible for a special award. Visit Room 251 to learn more!

Special Awards

Best Technical Construction | for a machine with the best overall construction, fit, and finish. *(Team Ballot)*

College & Career Ready Award | for being the team that exemplified skills in applied knowledge, effective relationships, and workplace skills. *(Judge Deliberation)*

Most Creative Use of Materials | for being the team that used unusual objects to build their machine or used an everyday object in a new fun way. *(Team Ballot)*

Most Innovative Step | for being the team with the most creative or ingenious step/transfer of energy. *(Judge Deliberation)*

People's Choice | for being the fan favorite. *(Ballot)*

Persistence Award - for being the team that displayed grit and persistence or Above & Beyond -

3M Resource Center

The 3M Resource Center is new this year and generously sponsored by 3M (New Ulm). This is conveniently located near the contest area and is available for teams to use. Take what you need, return what you do not use! This will also be a key resource for teams as they navigate the first of its kind – Redesign Round!

for being the team whose determination was commendable. *(Judge Deliberation)*

Theme Award | for being the team that best identifies and communicates the competition theme. *(Team Ballot)*

People's Choice

Everyone is welcome to cast their ballot for the **People's Choice** award!

Vote for the machine that is simply YOUR favorite. Submit your ballot by 3:00PM to have your vote counted. (<https://forms.office.com/r/swPUwwhAa6>)



Team Ballots

Each team can cast their ballot for the team ballot special awards. One ballot per team. Submit your team ballot by 3:00PM to have your vote counted.

Team Journals

Team journals are accessible online: engineering.mnsu.edu/engineering-machine-design-contest/championship/journals



Advice for Teams



Jake Mason | *Operations Manager, 3M*

Contest advice to teams: It is exciting to see all talented teams participating in this event. My advice for participants is to make this a fun experience for yourself and especially for your team. With so many talented individuals involved in the championship, the winning teams will be the ones who can figure out how to work together in such a way that the combined skill of the team is greater than the sum of each individual's skills. This holds true in both this competition and in the real-world workplace. Good luck!

Career advice to teams: As you begin to explore careers, be open to learning different skillsets. If you are great at STEM and want to be an engineer or scientist that doesn't mean you should stop reading because you don't think you will need it. Your future career will require you to be a broad problem solver with skills in multiple areas.

Rebecca Walker | *Connections Coordinator, Anoka Technical College*

Advice to teams: Each interaction with your teammates, your coach, your fellow competitors, and each run of your machine is a new opportunity to learn something new. How can you expand your knowledge and experience today?! Congratulations on your hard work!



Ben Arndt | *Logistics/Continuous Improvement Manager, Ajax Metal Forming Solutions*

Contest advice to teams: Beware rabbit holes! Don't spend all your time chasing one point on the rubric and neglect everything else. **Career advice to teams:** You'd be surprised how many different things you'll be content doing for work. Don't be afraid of change, and don't be afraid to try new opportunities!

Leah Greuel | *Architect & Instructor, Dakota County Technical College*

Contest advice to teams: Keep your mind open about solutions to potential problems that may still arise. Keep learning as you develop solutions and don't shut down options due to a tight timeline. **Career advice to teams:** Think about creative ways to achieve where you may see yourself in 10-15 years. Careers are built more on what you can contribute vs. strict credentialing. Bring something new to the table that can add a new perspective.



Carl Borleis | *Director of Program Excellence, Minnesota State Transportation Center of Excellence*

Career advice to teams: Follow your heart into the areas in which you perform well. Life will give you many challenges and will often take you out of your comfort zone, but choose a career that doesn't feel like a drudgery. Choose something you will enjoy and be ok with changes and adjustments to your career/job choices over time.

Jason Bruns | *Director, Minnesota State Engineering Center of Excellence*

Advice to teams: I hope the Engineering Machine Design Contest experience enriches your passion to seek a STEM career. The future is bright with you as part of it.



Judges

Ben Arndt | *Logistics/ Continuous Improvement Manager, Ajax Metal Forming Solutions*

Carl Borleis | *Director of Program Excellence, Minnesota Transportation Center of Excellence*

Charlie Boushek | *Owner, Aero Material Handling*

Jay Boyle | *Architect, Boyle Architects*

Michael Brand | *Manufacturing Engineer, nVent Hoffman*

Sam Brockshus | *Structural Engineering Practice Group Leader, ISG*

Jason Bruns | *Director, Minnesota State Engineering Center of Excellence*

Aaron Budge | *Acting Dean College of Science, Engineering and Technology, Minnesota State University, Mankato*

Vic Dreier | *Sr. Director, Project Lead The Way*

Christopher Frederick | *Project Manager, Electrical Consultants, Inc.*

Derrick Galinat | *Project Manager, Electrical Consultants, Inc.*

Leah Greuel | *Architect & Instructor, Dakota County Technical College*

Wayne Hamlin | *Machining Manager, Anderson Dahlen Inc.*

Samantha Hanson | *Transfer Specialist, Anoka Technical College*

Paul Heida | *Teacher-Tech Ed Communications, Anoka High School- STEAM program*

Kim Hermer | *English Teacher/Career Development Specialist, Mankato Area Public Schools*

Josh Hogan | *Engineer, Boston Scientific*

Joe Ibberson | *Plant Engineering Supervisor, 3M New Ulm*

Andy Jackson | *General Chemistry Laboratory Coordinator, St. Cloud State University*

Shari Jorissen | *Director of Institutional Effectiveness, Anoka Technical College*

David Kimori | *Professor, Minnesota State University, Mankato*

John Madsen | *VP, Manufacturing Practice, Black Line Group*

Jake Mason | *Operations Manager, 3M*

James Merritt | *Strategic Account Manager, Virtex*

Chantal Nack | *Graduate Structural Engineer, ISG*

Jennifer Peck | *PK12 STEM Educator, CESA 10 Wisconsin*

James Person | *Compliance Specialist, Federal Cartridge (Retired)*

Ryan Shirk | *Electrical and Computer Engineering Instructor, Minnesota State University, Mankato*

Jerry Sosinske | *Engineer, Science from Scientists*

Scott Stammer | *Engineering Manager, nVent*

Beth Stanley | *Career Pathway Coordinator, ISD622/North High School*

Kyle Suomala | *Manufacturing Engineer, nVent*

Andrea Thorstensen | *Assistant Professor of Hydrology and Environmental Engineering, St. Cloud State University*

Junior Division Teams

Team #1 | **Galaxy Girls, Bloomer Middle School** | Coach: Samantha Rubenzer
10:00 AM Team: Eleasha Kuehl, Leah Rada, Madison Thiessen, Hazel Clemmens, Aliyah Neuenschwander

Team #2 | **Blessed Maria Saints, Blessed Maria Assunta Pallotta Middle School** | Coach: Christine Bailey
10:25 AM Team: Anna Feldmann, Loral Peters, Sofia Park

Team #3 | **Fish, Anthony Acres** | Coach: Paul Richards
10:50AM Team: Archer Micklus, Carson Stamm, Quin Sandberg, Ada Reck

Team #4 | **Space Xcursions, New Century School** | Coach: Brad Blue
11:15AM Team: Amal Abdalla, Amal Abdullahi, Umulkher Abdullahi, Abdirahim Hashir, Abdikassim Bule, Aswan Ismail, Shamsia Jara, Mumtas Kariye, Abdulle Mohamed

Team #5 | **Bible Babes, Wildlands School** | Coach: Alexa Schroeder
11:40AM Team: Jane Black, Sophia Wanke, Josselyn Lane

Team #6 10:00AM	Depressed Dinos, Wildlands School Coach: Alexa Schroeder Team: <i>Remi Moon, Lyrik Bergerson, Maddy Zeug, Eila Ambler</i>
Team #7 10:25AM	Star Gazers, International Spanish Language Academy Coach: Julia Breyer Team: <i>Anna Breyer, Lauren Breyer, Maia Rodriguez, Gia Toran</i>
Team #8 10:50AM	Koren Academy, Koren Academy Coach: Ben Koren Team: <i>Davian Koren, Dominic Koren, Emma Koren, Ashley Schmidt, Jeron Brown, Amalia Peterson, Danen Peterson</i>
Team #9 11:15AM	St. John Stem Club: The Space Race, St. John Lutheran School Coach: David Inselmann Team: <i>Nathan Inselmann, Wyatt Beaudry, Ethan Burdick, Noah Tatkenhors, Aiden Klopp, Rachel Hanson, Abigail Woltmann, Preston Kowsary</i>
Team #10 11:40AM	Project Liftoff, Pine Harbor Christian Academy Coach: Jennifer Henderson Team: <i>Connor Johnson, John Samii, Colin Johnke, Seth Warner, Xavier Timm, Adrian Fuchs</i>
Team #11 10:00AM	Escape from the Aliens, Pine Harbor Christian Academy Coach: Jennifer Henderson Team: <i>Ashley McDonald, Lexi Anderson, Naomi Constantino</i>
Team #12 10:25AM	Galaxy Geese, Wildlands School Coach: Alexa Schroeder Team: <i>Israel Garcia, Aiden Barnett, Daniel Madsen</i>
Team #13 10:50AM	Apollo 11, Wildlands School Coach: Alexa Schroeder Team: <i>Wyatt Tegtmeier, Andrew Nimz, Logan Littlefair</i>
Team #14 11:15 AM	Steam Team, Homeschool Coach: Mary Lemke Team: <i>Joseph Lemke, Valentino Zito</i>
Team #15 11:40AM	International Space Launch Association (ISLA), International Spanish Language Academy (ISLA) Coach: Adriana Maldonado Team: <i>Katelyn Owen, Myles Ally, Emma Perrin</i>
Team #16 10:00AM	The Smarshins, Chatfield Public Schools Coach: Nora Gathje Team: <i>Logan Pearson, Jack Logue, Emma Fink, Amelia Biers, Jameson McManimon, Addy Johnsrud, Brandt McBroom, Eli Manihan, Liam Brawdy, Lincoln Goldsmith</i>
Team #17 10:25AM	The Martians, Cotter Schools Coach: Eric Paulsen Team: <i>Shawn Freya, Zephyr Paulsen, William Kirk, Carter Knuesel, Jack Slaggie, Jacob Moore Jaxson Greshik</i>
Team #18 10:50AM	Worthington Christian School, Worthington Christian School Coach: Eric Milbrath Team: <i>Kaitlyn Brunk, Noah Gravenhof, Camren Luther, Trey Milbrath</i>
Team #19 11:15AM	Space Ducks, Wildlands School Coach: Alexa Schroeder Team: <i>Danica Strauss, Aryanna Bergerson, Collin Williamson</i>

Senior Division Teams

Team #21 10:00AM	Space Rubber Ducks, Neillsville High School Coach: Duane King Team: <i>Levi Young, Mackenzie Hediger, Mkendri Hericks, Adyln Marine, Yetzi Castillo, Will Drinka</i>
Team #22 10:25AM	Cougar Space Squad, Sumner-Fredericksburg High School Coach: Amy Price Team: <i>Kaitlyn Newlon, Jasmine Coronel Mejia, Ryan Rich, Kellian Dillon</i>
Team #23 10:50AM	Space XI, Pius XI Catholic High School Coach: Cathy Zurawski Team: <i>Kim Albright, Casey Brophrey, Ellie Baudry, Anthony Ehligier, Drew Miler, Raul de Jesus, Murphy Roszak, Elise Sepulveda, Katie Mendez, Samantha Christian, Zach Nowak, Michael Reed</i>

- Team #24** **Journey to the Fourth Planet, Chatfield Public Schools** | Coach: Nora Gathje
11:15AM Team: Nick Long, Marianna Miron, Charli Oeltjen, Ella Bakken, Rachel Johnson, Aiden Johnsrud, Claudia Meier, MacKenzee Douglas
- Team #25** **Octo-Cats, Cotter Schools** | Coach: Eric Paulsen
11:40AM Team: Erica Beckman, Everette Engler, Cooper Christopherson, LeYan Thean, Nathan Burchill
- Team #26** **Snoops Dogs, Anoka High School** | Coach: Todd Hunter
12:05PM Team: Annie Hjelle, Paige Schultz, Bridgette Bottineau, Amber Hansen, Peyton Johnson, Awa Cisse, Erin Neises, Annika Backman, Courtney Graves, Katrina SanTERS
- Team #27** **Sparkle Darts, Anoka High School** | Coach: Todd Hunter
10:00AM Team: Ben Dauman, Connor Fisher, Ethan Zajaczkowski, Sam Urbaniak, Luke Weness, PJ Wasurick, Gabe Johnson, Teagan Gordy, Erik Redding
- Team #28** **Mission Bean, Augusta School District** | Coach: Chuck Catt
10:25AM Team: Devin Molinaro, Connor Ziwisky, JT Littlefair, Wyatt Sudbrink, Sam Waller
- Team #29** **The NASA Mishap, Southland High School** | Coach: Paula Mortenson
10:50AM Team: Sean Humphrey, Aubrie Schneider
- Team #30** **Exoplanet Explorers, St. Ansgar** | Coach: Devin Schwiesow
11:15AM Team: Mikhail Meyer, Madilynn Schmidt, Maci Juenger, Addison Tabbert, Jessica Horgen, Khari Young, Lucy Young
- Team #31** **LCWM Slug, Lake Crystal Welcome Memorial** | Coach: Randall Van Genderen
11:40AM Team: Megan Lawver, Destiny Alberty, Lohr Anderson, Samuel Bartelt, Tanis Kirkpatrick, Nevaeh Figueroa
- Team #32** **New Berlin Eisenhower - Purple, New Berlin Eisenhower** | Coach: Dana McLaren
12:05PM Team: Becca Hall, Gabby Kazinski, Mandy Maly, Becca Przybysz, Owen Schaar, Jayden Tay, Lucas Anderson, Jalesh Seshman, Alex Teller, Kyle Wisniewski, Quinn Shields
- Team #33** **New Berlin Eisenhower - Gold, New Berlin Eisenhower High School** | Coach: Devin McKinnon
10:00AM Team: Breanna Brusola, Rowan Wells, Addison Pankowski, Hailey Beyer, Lexi Loomer, Claire Nickerson, Paul Krueger, Kyle DiGiacomo
- Team #34** **The Flat Earthers, Waunakee High School** | Coach: Tammy Rademacher
10:25AM Team: Kai Bennett, Row Burton, TJ Doescher, Zach Hurlebaus, Ethan Neville, Kaleb Ament, Ryan Khalili, Danny Zimm, Fritz Simon
- Team #35** **Rocket Rednecks, Lake Holcombe School District** | Coach: Andy Lorenzen
10:50AM Team: Jaiden Cornell, Hunter Fasbender, Chase Burgess, Danny Sinnette, Robert Luethi, Daevyn Gilbertson, Trent Kron
- Team #36** **Eleva-Strum Engineers, Eleva-Strum High School** | Coach: Tyson Rohrscheib
11:15AM Team: Cora Gehrke, Sam Gehrke, Jared Bohn, Kahlan King
- Team #37** **Northwood-Kensett Physics, Northwood-Kensett** | Coach: Stacy Martin
11:40AM Team: Teagan Hackenmiller, Teagan Johnson, Jadyn Beland, Tristen Schnulle, Taylor Rodemeyer

Best of luck to all of the teams!

Champions Round & Redesign Challenge

Teams participating in the Redesign Challenge and advancing to the Champions Round will be announced at 1:00PM in the Auditorium. Team time assignments will be shared at that time.

Champions Round

Team A	1:30PM
Team B	1:55PM
Team C	2:20PM
Team D	2:45PM
Team E	3:10PM
Team F	3:35PM

Redesign Challenge

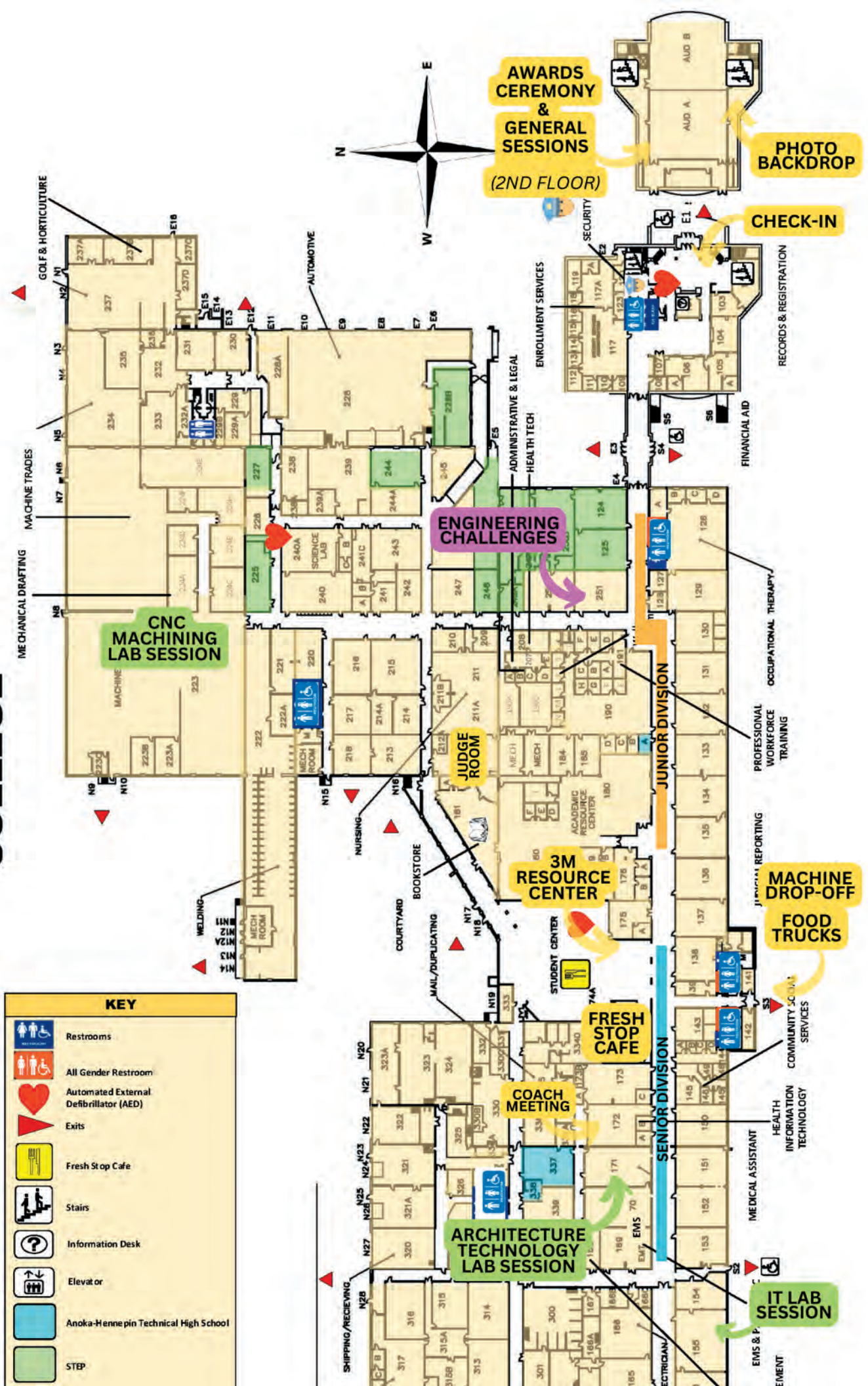
Team G	1:20PM
Team H	1:30PM
Team I	1:40PM
Team J	1:50PM
Team K	2:00PM
Team L	2:10PM
Team M	2:20PM
Team N	2:30PM
Team O	2:40PM
Team P	2:50PM
Team Q	3:00PM
Team R	3:10PM
Team S	3:20PM

Acknowledgements

Thank you to all the regional contest organizers, staff, judges, volunteers, and others that have helped to make this event a success! A special thank you to the 2023 EMDC Championship Host Anoka Technical College and Rebecca Walker. Thank you to our sponsors – without their support, this program would not be possible!



ANOKA TECHNICAL COLLEGE



KEY	
	Restrooms
	All Gender Restroom
	Automated External Defibrillator (AED)
	Exits
	Fresh Stop Cafe
	Stairs
	Information Desk
	Elevator
	Anoka-Hennepin Technical High School
	STEP



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Engineering Center of Excellence

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EVENT PROGRAM