

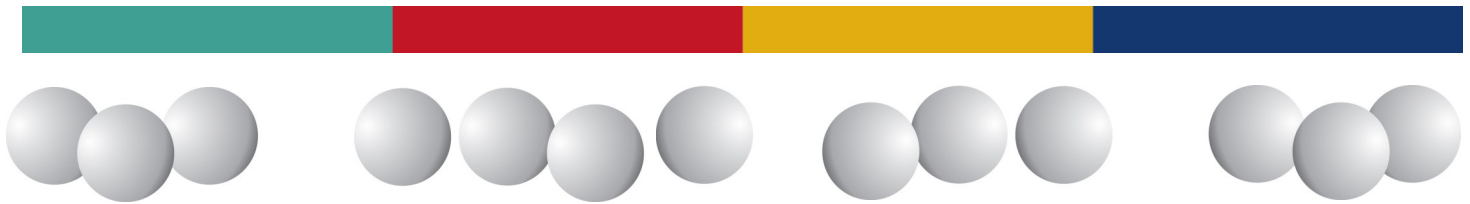


March 19 — 21, 2015
University of Scranton
Scranton, PA

FIRST® Tech Challenge Super-Regional National Sponsors

**Rockwell
Collins**





Welcome to the **FIRST® Tech Challenge United States Super-Regional Championship Tournaments Sponsored by Rockwell Collins and the Center for Energy Workforce Development.** Teams in the United States advance to one of four Super-Regional Championship Tournaments through high achievement at a state or regional Championship event. *FIRST* congratulates all the teams at this event for outstanding performance this season.



Presented by Rockwell Collins
March 26 - 28, 2015
Iowa Events Center
Des Moines, IA



Presented by Google
March 27 - 29, 2015
Oakland Convention Center at City Center
Oakland, CA



March 19 - 21, 2015
University of Scranton
Scranton, PA



An estimated 4,500 teams will compete at more than 400 Qualifying and Championship Tournaments taking place in the United States, Australia, Canada, China, Czech Republic, France, Germany, India, Mexico, Netherlands, New Zealand, Russia, South Korea, and Taiwan during the 2014-2015 season. Top teams from the Super-Regional Championships advance to the World Championship in St. Louis, Missouri in April. *FIRST* Tech Challenge Sponsors include Official Program Sponsor for the *FIRST* Tech Challenge, Rockwell Collins, and our CAD and Collaboration Sponsor PTC.



Grades K-3

Grades 4-8

Grades 7-12

Grades 9-12

Welcome to the **FIRST® Tech Challenge (FTC®)**:

FIRST® Tech Challenge is designed for students in grades 7-12 to compete head to head, using a sports model.



Teams are responsible for designing, building, and programming their robots to compete in an alliance format against other teams. The robot kit is reusable from year-to-year and is programmed using a variety of languages. Teams, including Coaches, Mentors and Volunteers, are required to develop strategy and build robots based on sound engineering principles. Awards are given for the competition as well as for community outreach, design, and other real-world accomplishments.

**“...to create a world where science and technology are celebrated...
where young people dream of becoming science and technology leaders.”**

- FIRST Founder, Dean Kamen

About **FIRST® Tech Challenge:**

FTC is an exciting and fun global robotics program that ignites an enthusiasm for science, technology and discovery in young people and teaches them STEM skills and concepts, principles of leadership, and how to work as a team.

The competitions are the result of focused brainstorming, dedicated mentoring, project timelines and teamwork. Paired with technical mentors, teams learn from and play with the “pros” to experience engineering problem solving first-hand. **FIRST® Tech Challenge**:

- Entices kids to think like scientists and engineers
- Provides a fun, creative, hands-on learning experience
- Teaches kids to experiment and overcome obstacles
- Helps make the skills that they learn—like math and science—tangible, accessible and real
- Is endorsed by the National Association of Secondary School Principals
- Encourages teams to document their design ideas and discoveries
- Builds self-esteem and confidence
- Helps 90% of students learn how STEM can solve real-world problems

Tournament Schedule

Thursday, March 19

12:00 pmTeam Check-in & Pits Open
1:00pm - 6:00 pmJudging & Robot Inspection
7:00 pmTeam Pits Close

Friday, March 20

7:00 am.....Team Pits Open
8:00 am - 8:30 amDrivers Meeting
9:00 am - 9:30 amOpening Ceremony
9:30 am - 12:00 pmQualifying Matches
12:00 pm - 1:00 pmLunch Break
1:00 pm - 5:30 pmQualifying Matches
6:00 pmTeam Pits Close
7:30 pm - 10:00 pmTeam Social

Saturday, March 21

7:30 am Team Pits Open
8:30 am - 10:00 am Qualifying Matches
10:00 am - 10:45 am Alliance Selection
10:45 am - 12:00 pm.... Division Semi-finals
12:00 pm - 1:00 pm..... Lunch Break
1:00 pm - 2:00 pm..... Division Finals
2:00 pm - 3:00 pm..... Finals
3:30 pm - 4:30 pm..... Closing Awards Ceremony
5:30 pm Team Pits Close



Match Play

During the **Qualifying Matches**, teams are randomly assigned into alliances of 2 teams. A team's alliance partner in one match may be their opponent in the next match.

Teams will be ranked from first through last on the basis of their total Qualifying Points (QPs). If multiple teams have the same QP total, then teams will be ranked on the basis of their Ranking Points (RPs). If multiple teams have the same RP total as well, then teams will be ranked on the basis of their highest match score. If still tied, the next highest match score will be used until the tie is broken.

Qualifying Points: Teams receive 2 points for a Win, 1 point for a Tie and 0 points for a loss or disqualification (DQ).

Ranking Points: All teams receive the score of the losing alliance before penalties unless they have a DQ (which gives the team 0 RP).

Alliance Selections are held after all of the qualifying matches take place. Four alliance captains are selected based on the team rankings. These captains then pick one or two (depending on the size of the event) additional teams to be their alliance partners for the Elimination Matches.

During the **Elimination Matches**, Alliances compete to be the first to win two matches in a standard best two out of three elimination round.



The Game:

CASCADE EFFECTSM is played on a 3.66 m x 3.66 m (12'x12') square Field with approximately 30.5 cm (1')-high walls and a soft

foam mat playing surface. Two randomly selected teams are paired together as an Alliance to play a match against a second Alliance. Alliances are designated as either "Red" or "Blue."

Scoring Elements are 160 white plastic balls - large (40) and small (120). In the middle of the field is the Center Field Structure which contains two Ball Dispensers with trap doors held in place by Alliance-specific Kickstands. There are also two Center Goals - one Red and one Blue - with Infrared Beacons placed beneath each Goal. The field has six Alliance-specific Rolling Goals with clear Ball Tubes of various heights (30 cm, 60 cm, 90 cm) as well as two Alliance-specific Ramps, Platforms, and Parking Zones.

At the start of the Match, the Balls (large and small) are loaded in the Dispensers in the Center Field Structure. Each Team is given two balls (one large and one small) that can be pre-loaded onto their robot.

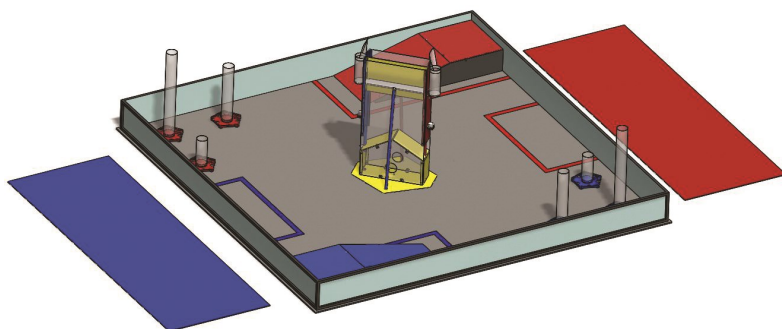
Autonomous Period:

The Match starts with a 30-second Autonomous Period where Robots are operated via pre-programmed instructions only. Prior to the start of the Autonomous Period, the Center Struc-

ture will be rotated to one of three positions. Points will be awarded for Robots achieving certain tasks including placing Autonomous Balls in the Rolling Goal and/or Center Goal, Robots moving off the Platform, knocking over the kickstand (and releasing balls into the field of play), and moving their Rolling Goals into the Alliance's Parking Zone.

Driver-Controlled Period:

In the next two minute Driver-Controlled Period, Robots are tasked with collecting Balls and placing them in the Rolling



Goals. Balls Scored In the Rolling Goals are worth points based on the length of the Ball Tube and the Ball Height (at the end of the Match), as shown in the table below.

End Game:

The last 30 seconds of the Driver-Controlled Period is called the End Game. During the End Game, Robots may Score Balls into the Center Goal as well as the Rolling Goals. Teams can also earn bonus points for every Robot and Rolling Goal that is not in contact with the floor when the Match ends and by moving their Rolling Goals and/or Robots into the Alliance Parking Zone.

Game Period	Autonomous Period	Driver-Controlled Period	End Game
When Scored	End of Period	Scored at End of Game	
Driving from Platform On to Playing Field floor	20 points		
Releasing the Kickstand to distribute Balls	30 points		
Autonomous Ball In any Rolling Goal	30 points/Goal		
Autonomous Ball In Center Goal	60 points		
Moving Rolling Goal In Parking Zone	20 points/Goal		
Balls Scored In 30 cm Rolling Goal		1 point per cm	
Balls Scored In 60 cm Rolling Goal		2 points per cm	
Balls Scored In 90 cm Rolling Goal		3 points per cm	
Robot / Rolling Goals In Parking Zone			10 points/item
Robot / Rolling Goals Completely Off the Floor			30 points/item
Balls Scored In Center Goal			6 points/cm

Participating Teams — Hopper Division

<u>Team #</u>	<u>Team Name</u>	<u>School / Organization</u>	<u>Location</u>
28	PolyGnomes	Green Meadow Waldorf School	Chestnut Ridge, NY
121	Rhode Rage	Aquidneck Island Robotics	Portsmouth, RI
207	Critical Mass	Dwight-Englewood School	Englewood, NJ
365	MOE	FIRST State Robotics	Wilmington, DE
2753	Team Overdrive	Teen Technology	Bridgewater, NJ
3113	Some Disassembly Required	Boy Scout Troop 793	Glenelg, MD
3477	Geeks in Just Their Underpants	Community	Crozet, VA
3774	Hive Voltage	Bayonne High School	Bayonne, NJ
4029	2 Bits and a Byte	Lexington High School	Lexington, MA
4137	Islandbots	Independent	Setauket, NY
4318	Green Machine - Reloaded!	Horizons 4-H Club	Ellicott City, MD
4531	Purple Chaos	Mt. Hope High School	Bristol, RI
4924	Tuxedo Pandas	New River Robotics Association	Christiansburg, VA
5030	ClashBots	Mt. Hope High School Robotics	Bristol, RI
5169	Watt's Up?	Say Watt Robotics	Edison, NJ
5308	Orange Hornets	Orange County High School	Orange, VA
5378	Team Aperture	Ashburn Robotics	Ashburn, VA
5421	RM'd and Dangerous	Richard Montgomery High School	Rockville, MD
5916	Bo-Bots	Bohemia Manor High School	Chesapeake City, MD
6029	Robowiz	Team Robowiz	Fairfax, VA
6055	GearTicks	GearTicks	Lincoln, MA
6347	Geared Up	Geared Up Robotics	Rome, NY
6719	Piotech	Pioneer Academy	Wayne, NJ
6996	Oncoming Storm	Bay Trail Middle School	Penfield, NY
7120	Bionica	George W Hewlett High School	Hewlett, NY
7182	Mechanical Paradox	Horizons 4-H Robotics Club	Ellicott City, MD
7266	Dragonettes	Glenelg Country School	Ellicott City, MD
7423	Flaming Phoenix	Unionville-Chadds Ford School District	Kennett Square, PA
7953	Vertigo	Albemarle High School	Charlottesville, VA
8221	Cubix^3	ETC Robotics	Hampstead, MD
8379	The Parity Bits	Lexington High School	Lexington, MA
8391	W-Prime Robotics	The Westport Library	Westport, CT
8462	Friends, Robots, Countrymen!	Friends and Family	Hanover, NH
8509	Steel Serpents	Creative Learning Collaborative	Pittsburgh, PA
8644	The Brainstormers	Friends-Family	Lexington, MA
9244	Lenape Robotics	Lenape Valley Regional High School	Stanhope, NJ

Participating Teams — Tesla Division

<u>Team #</u>	<u>Team Name</u>	<u>School / Organization</u>	<u>Location</u>
40	HAX Robotics	The Loomis Chaffee School	Windsor, CT
154	Renegade Robotics	Burrillville High School	Harrisville, RI
310	StuyFission	Stuyvesant High School	New York, NY
519	Ed Too -Pokemon Trainers	Herndon High School	Herndon, VA
3085	Higgs Bots	Mt. Everett Regional High School	Sheffield, MA
3415	Lancers	Livingston High School	Livingston, NJ
3540	Roboboogie	George W Hewlett High School	Hewlett, NY
4017	Robopandas	Sewanhaka High School	Floral Park, NY
4082	RoboSpartans	RoboSpartans Robotics	New Hartford, NY
4174	Atomic Theory	The Dalton School	New York, NY
4347	NanoGurus	NanoGurus Robotics	Morris Plains, NJ
4554	Robo Mustangs	Putnam Science Academy	Putnam, CT
5017	RoboEpic	Greenwich Academy	Greenwich, CT
5069	Robogamers	Robogamers Robotics Club	New York, NY
5272	Heptahelix	Battlefield High School	Haymarket, VA
5319	Wolverines	Buffalo Academy of Science Charter School	Buffalo, NY
5414	Techie Tornados	Richlands High School Upward Bound	Richlands, VA
5602	Bionic Gaels	Kennedy Catholic High School	Somers, NY
6022	TBD - To Be Determined	Aurora Robotics / Aurora High School	Aurora, OH
6037	W.A.G.S.	Girl Scouts of West Windsor-Plainsboro	Princeton Junction, NJ
6081	i²robotics	i²robotics	Westport, CT
6700	X-bots	Family Friends	Fairfax, VA
6955	Robovines	Saratoga County 4-H	Ballston Spa, NY
7117	The Blockheads	Family & Friends	Burke, VA
7176	Bionic Tigers	Haysi High School	Haysi, VA
7244	Out of the Box	Independent	Thorndale, PA
7350	Watt's NXT?	Say Watt Robotics	Edison, NJ
7487	Suffern's Super Seven	Suffern High School	Suffern, NY
8129	Cane Bots	Warwick Veterans Memorial High School	Warwick, RI
8227	Enginuity	Lenox High School	Lenox, MA
8390	Nerd Herd	Henley Middle School	Crozet, VA
8405	Milburn Robotics	Millburn High School	Millburn, NJ
8498	The Evil Purple Sox	SW Virginia Technology Development Ctr.	Lebanon, VA
8521	Hard-Hitting Hardware Hooligans	4-H Mindstorm Maniacs Club	Gaithersburg, MD
8645	Robotic Doges	Laurel Highlands Education and Robotics	Hollsopple, PA
9372	Standard Model	The Dalton School	New York, NY

FIRST® Tech Challenge Awards

INSPIRE - The highest award that a team can be given.

This judged award is given to the team that truly embodied the “challenge” of the FTC program. The team serves as an inspiration as to what this program, and the young minds involved, can accomplish. This team has performed well in all judging categories and is chosen as a role model for all teams.

ROCKWELL COLLINS INNOVATE - Bringing great ideas from concept to reality.

This judged award celebrates a team that not only thinks outside the box, but also has ingenuity and inventiveness to make its designs come to life.

PTC DESIGN - Industrial design at its best.

This judged award recognizes design elements of the robot that are both functional and aesthetic. All successful robots have innovative design aspects; however, the PTC Design Award is presented to teams that incorporate industrial design elements into their solution.

MOTIVATE - Showing the community what it means to be a team.

This judged award celebrates the team that exemplifies the essence of FTC through teamwork and outstanding team spirit.

CONTROL - Mastering robot intelligence.

This judged award celebrates a team that uses sensors and software to enhance the robot’s functionality on the field.

CONNECT - Connecting the dots between community, FIRST, and the business world.

This judged award is given to the team that has best connected with its local community and engineering community.

THINK - Removing engineering obstacles by using creativity.

This judged award is given to the team that best reflects their engineering design process, season and journey through their engineering notebook.

PROMOTE - Many decisions, but choosing FIRST was easy!

This judged award is given to the team that is most successful in creating a compelling video message for the public designed to change our culture and celebrate science, technology, engineering and math.

COMPASS - A beacon and leader in the journey of FTC.

An FTC team is about more than building robots, and competing at tournaments. How does a team find its way? This judged award recognizes an adult Coach or Mentor who has provided outstanding guidance and support for a team during the year.

ALLIANCES

The winning alliance and finalist alliances are recognized for their achievement in robot game performance.

Honoring East Coast Technology Pioneers

Our two competition divisions are named after these science and technology leaders who lived and worked on the East Coast of the United States and contributed greatly to our society.

Grace Murray Hopper

(1906 — 1992)

"Amazing Grace" Hopper created modern programming languages and conceptualized and promoted progressive technologies that are used today in computing and communications. She also coined the term "debugging" to fix computer errors. She served in the U.S. Navy for most of her career and retired at the rank of Rear Admiral.



Nikola Tesla

(1856 — 1943)

Nikola Tesla was an electrical and mechanical engineer as well as a prodigious inventor. He developed alternating current (AC), built the first hydroelectric dam with George Westinghouse, invented the induction motor, the rotating magnetic field, the Tesla coil, and the radio remote control for torpedoes among many other achievements.





FIRST® participants have access to over \$20 million in scholarships. Find out how you are eligible!

OUR MISSION is to inspire an appreciation of science and technology in young people. Colleges, universities, corporations, and associations support this mission by making available more than \$20 million in *FIRST*® Scholarships to students who want to take their *FIRST* experience to the next level.

The *FIRST* Scholarship Program puts *FIRST*® Tech Challenge (FTC®) and *FIRST*® Robotics Competition (FRC®) participants in direct contact with colleges, universities, corporations, and associations offering hundreds of scholarship opportunities exclusively for *FIRST* participants.

FIRST Scholarships are offered, funded, and administered by the Scholarship Providers.

Scholarships vary in value from one-time awards of \$500 to full tuition for four years estimated at \$160,000, and most awards are renewable annually if an acceptable academic average is maintained. Although most scholarships are merit-based, others are for a broad range of scholastic abilities. Some are for specific majors such as engineering, math, science, computer science, or technology (60%); still others are available for any course of study (40%). The majority of scholarships are for specific colleges and universities; however, a few can be used at any school. Eligibility is different for each of the scholarships, so you will need to view each one's criteria carefully. You may be surprised by the variety and value of opportunities available!

How it works:

- *FIRST* Scholarships are offered and administered by the Scholarship Providers.
- FTC and FRC participants are eligible to apply as noted.
- Most applications are due between December and April, but be sure to pay close attention to individual submission deadline dates.
- Find opportunities, details, and applications at:
WWW.USFIRST.ORG/SCHOLARSHIPS

Receiving a scholarship can have a big impact on deciding which college to attend or whether or not it's affordable. A scholarship opportunity might make you aware of a school you hadn't even considered. Why not take advantage of scholarships available for *FIRST* Robotics Competition (FRC) and *FIRST* Tech Challenge (FTC) team participants?



Learn more today: WWW.USFIRST.ORG/SCHOLARSHIP

About FIRST®



Dean Kamen

"We want to change the culture by celebrating the mind. We need to show kids that it's more fun to design and create a video game than it is to play one."

Dean Kamen, Founder, FIRST

What is FIRST®?

Created to "turn young people on" to career opportunities in science, technology, engineering, and math (STEM), this 501(c)(3) not-for-profit organization founded by inventor, Dean Kamen, designs accessible, motivational programs combining teamwork, competition, and just plain fun for young people, ages 6 to 18, around the globe. Teams of youth in four different age groups, supported by more than 130,000 committed Mentors, Coaches, Volunteers, and Sponsors, accept the challenge to research a real-world issue or to fund, design, build, and compete with robots of their own creation under strict rules and time constraints. Local and regional winners face off in international FIRST® Championship competitions, earning medals, trophies, and "bragging rights." You are privileged to watch our young science, engineering, and technology leaders of tomorrow show off their skills, imaginations, Coopertition®, and Gracious Professionalism®.



Gracious Professionalism®, A FIRST Credo

Dr. Woodie Flowers, FIRST National Advisor and Pappalardo Professor Emeritus of Mechanical Engineering, Massachusetts Institute of Technology, coined the term "Gracious Professionalism®."

"Gracious Professionalism is part of the ethos of FIRST. It's a way of doing things that encourages high-quality work, emphasizes the value of others, and respects individuals and the community.

With Gracious Professionalism, fierce competition and mutual gain are not separate notions. Gracious professionals learn and compete like crazy, but treat one another with respect and kindness in the process. They avoid treating anyone like losers. No chest thumping tough talk, but no sticky-sweet platitudes either. Knowledge, competition, and empathy are comfortably blended.

In the long run, Gracious Professionalism is part of pursuing a meaningful life. One can add to society and enjoy the satisfaction of knowing one has acted with integrity and sensitivity."

Coopertition®

Coopertition® produces innovation. At FIRST, Coopertition is displaying unqualified kindness and respect in the face of fierce competition. Coopertition is founded on the concept and a philosophy that teams can and should help and cooperate with each other even as they compete.

Coopertition involves learning from teammates. It is teaching teammates. It is learning from Mentors. And it is managing and being managed. Coopertition means competing always, but assisting and enabling others when you can.



Dr. Woodie Flowers



Thank You Tournament Volunteers!

East Super-Regional Planning Committee

Pennsylvania FIRST Robotics, FTC Affiliate Partner, Tournament Organizers

Tom Zawislak, Dave Hackett – Co-Chairs

Matt Demascolo (PA), Carol Edelman (VA), Pat Frascella (NJ), Vince Frascella (NJ), Lise Hackett (PA), Lena Kang (DE), Rick Kline (NY), Nancy Paul (NH), Chad Thomas (PA), Rita Wall (PA); Joe Boyd, Julie Shumacher Cohen, Frani Mancuso, and Stan Zygmunt (University of Scranton)

Event Volunteers

Tournament Director: Tom Zawislak **Senior Technical Advisor:** Dave Hackett **Volunteer Coordinator:** Vince Frascella

Emcees: Jack Kentfield, Tom Wexler; **Game Announcers:** Victoria Freeman, Nick Pilaitis, Ingrid Rumbaugh

Judge Advisors: Bill Brownlowe, JoAnn Rerek

Judges: Russell Caspe, Eric Cheek, Bob Debes, China Genwright, Swami Gurusami, Michael Herbert, Brian Hildebrandt, Pearl Hwang, Sanjay Kakiride, Anurag Kanwar, Kavita Kanwar, Tarun Kapoor, Stephen Koytek, Rekha Mishra, Art Nilson, Milka Piszczek, Anil Saxena, Harry Shah, Stuart Surrey, Norman Sutaria, Richard Tinker, Cliff Warner, Joe Wyatt, Sathya Yalvigi

Match Observers: Sandeep Dharam, Rob Elkins, Jessica Lee, Isaac Lynn, Marge Rumbaugh, Robert Russell

Judge Assistants: Lena Kang, Carol Perrotto

Head Referees: Jeff Lucas (Event), Joe Houle (Division), Chris Fogwell, John Giardina

Referees: Sam Alexander, David Dennisur, Noah Dillard, Adria Garhart, Simon Gray, Yan Juras, Steph Merkel, Carol Perrotto, Dominic Pirrochi, J. Reidy

Field Technical Advisors: Dave Hackett (Lead), Rick Kline, Jim Rumbaugh, Robert Sokolov, John Yeh

FTA Assistants: Austin Frownfelter, Ethan Garrison, Julie Gauthier, Ben Martin, Allyson Ortiz, Andrew Szeto, Karlin Yeh

Field Managers: Joe Perrotto, Len Rerek

Field Control Operators: Michelle Fogwell, Alicia Griscom, Kyle Thorpe, Sal Torcivia; **Help Desk:** Jim Carr

Scorekeeping: George Marchant (Lead), Loretta Bessette, Lise Hackett, Roslyn Nilson, Rose Young

Queueing Leads: Mark Elliott, Linda Higham, Teshenia Hughes, Jim Hutchinson, Arun Malhotra, Barry Price, Brian Telfer

Queueing: Sarah Fogwell, Adam Frownfelter, Georgia Ioannou, Garrett Mackay, Jack O'Brien, Siteo Thiam, Sara Tolnay, Ben Weis, Owen Yang

Field Crew: Mattori Birnbaum, Zachary Caltarola, Grace Miller, Darius Pirocchi, Michael Vanderlyn, Akhila Yalvigi

Pit Admin and Check-In: Pat Frascella (Lead), Lyn Benonis, Daphne Frownfelter, Alexis Gray, Lise Hackett, Roslyn Nilson

Student Ambassador Coordinator: Carol Edelman

Photography: Daphne Frownfelter, George Marchant; **Entertainment Coordinator:** Rita Wall

Thanks to all additional volunteers whose names did not make it into the printed program!

Special Thanks

Program Booklet Editing: Rick Kline and Brooke Ribelin, Empire NY FTC; Printing by Pace University

Volunteer Shirts: Bobby Crusco, Bobbys Graphics

T-Shirt Design, Event DJ, and Entertainment: Tommy Leana

Sponsor Banners: Susan Estler, Lackawanna County Visitors Bureau

Lodging and Reservation Planning: Susan Lowrance, HelmsBriscoe

Event Banners: Joe Perrotto, Diamond State FTC

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PTC®

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Your Spectroscopy Partner

LOCKHEED MARTIN 

Thank you to all who help make this program possible for our youth. *FIRST* could not exist without the support of the army of mentors, parents, teachers and volunteers who step up to provide their time and expertise to inspire our young people to get excited about science, technology, engineering and math.