

Commitment. Expansion. Sustainability. Community. Zeal. These are the qualities it takes to forge a rich and lasting legacy.

### **Forging A Legacy Since 2011**

Team Neutrino's legacy has been tempered through a decade of dedication by members and mentors alike. Each class of students is like the blow of a blacksmith's hammer, refining our legacy further and leaving their own unique mark behind. What began as 9 Ames High School students in 2011 has become a team of 32 Story County students carrying the same fire as those who came before.

To ensure sustainable leadership, 3928's Leadership Core promotes a collaborative environment between sub-teams. The Leadership Core (LC) is led by the Captain and Co-Captain and involves student leaders and mentors. Agendas for LC's biweekly meetings consist of yearly budgeting, organizing summer training camps, planning team meetings, and discussing sub-team successes and challenges. To maintain transparency between LC and the full team, all LC agendas and notes are shared with the team.

Our integration structure lets new students quickly adapt to the team prior to competition season. Since 2017, Team Neutrino has taught 10 annual summer training camps for members in areas such as manufacturing, CAD, programming, video editing and fundraising. This summer we hosted online camps to provide a similar experience despite regulations against in person meetings. As 25% of our members are NEWtrinos, Graphics camp held "Premiere Night," a teambuilding activity to showcase the NEWtrinos' editing skills where they could both learn and become comfortable with the team.

Last season, 3928 incorporated an associate role to provide additional opportunities to students who cannot make the time commitment of FRC. Associates learn all the skills a NEWtrino does, tending to be more dedicated to a specific sub-team. The associate role provides opportunities to become a full team member in a future season as the student gains more familiarity with the team.

### **Educating Future Generations**

3928 fosters the FIRST community in Story County, leaving a growing legacy in younger generations. We run dedicated mentoring programs at 6 of 10 schools in Ames to introduce elementary and middle school students to STEM skills they can use throughout their lives, including programming, communication, research, and leadership. Since 2014, we have mentored 38 FLL and 37 FLL Jr. teams.

Because of the challenges COVID-19 posed, we reimagined our FLL mentoring program. This fall 3928 mentored four middle school FLL teams, participating in twice weekly video calls with FLLers to provide assistance on projects, robot missions, and instilling core values. An FLL coach set up competition tables and laptops in person so students could program their robots from home using Zoom's remote control feature. Further, 3928 hosted our annual FLL scrimmage online this season to prepare our teams for competition.

To remove financial barriers for growing FIRST teams, we run a mini-grant program that allows teams to request funding for specific needs such as season or competition registration fees. This season we provided \$650 in funding to 5 teams and have provided a total of \$5,039 to 33 teams since 2015.

3928 started FTC Team #18050 Team Photon at Ames High School, which provides additional opportunities for high school students to participate in FIRST. Over the summer we ran joint training camps with 18050 to build comradery within our two programs and to provide each other with the skills needed to be successful for seasons to come.

Reaching beyond our borders, this past summer 3928 assisted Ashur Robotics, the first Iraqi FRC Team. We provided written resources (ie CAD guides and graphics templates) and assisted them in developing their own Identity Standards, including designing a logo, writing branding guidelines, and creating social media accounts. FRC Team #7285 Sneaky Snakes from Turkey also provided valuable assistance in collaboration with us. We hosted video calls with both teams to provide insight into running a successful team and recruiting sponsors in the Middle East. 3928 will continue to assist Ashur through their rookie years to provide them guidance and friendship.

### **Cultivating Lasting Relationships**

An important piece to Team Neutrino's legacy is relationships; 71% of our 14 sponsors have supported 3928 for 3+ consecutive years. Sponsors support the team by donating raw materials and funds, as well as providing employee mentors to give professional insight. Of our 13 mentors who work in industry, half of them come from our sponsors.

Since 2012, Team Neutrino has visited our sponsors to present during annual visits organized by our student-driven fundraising team. Students reach out to potential sponsors, budget our spending, and sustain our relationships. In addition to managing our \$57,200 yearly budget, 3928 students write and submit grant applications to businesses, securing consistent monetary support. 3928's fundraising team also updates sponsors with monthly/bimonthly newsletters and a yearly thank-you video to show supporters the impact of their resources.

Additionally, members are given opportunities to apply their knowledge through the team's sponsorships. Ryan, a junior on the team, now spends his summers working for one of 3928's sponsors, Frontline Bioenergy, organizing construction projects. "These acquired skills that I gathered [from Team Neutrino] transitioned directly into the tasks that I was given, which is very exciting to me and makes me look forward to learning more skills and seeing how they translate into my job," says Ryan, who now gives back to the community by passing on his experiences in design and organization to the FLL students he mentors.

### **Impacting Our Community And Beyond**

Outreach remains an integral part of our team's legacy. Since 2011, Team Neutrino has catalyzed the culture around STEM in Ames, creating learning opportunities for students. Over the past 3 years, we've spent 3,050 hours reaching 38,517 people at 52 outreach events, with all of our members actively contributing to making these events successful year after year.

3928 takes pride in maintaining lasting outreach connections. We've spent 2,978 hours at Ames Community School District's Enrich Empower Excel program since 2012, impacting 497 kids in total. We develop original curriculum for seven classes covering LEGO Mindstorms and Makerspace activities, such as 3D printing and circuitry. 3928 has also attended 25 events at the Science Center of Iowa (SCI) since 2012. Volunteers for our booths at the Girls in Science Festival are never in short supply, and at the 2019 Mini Maker Faire, we brought 22 team members to volunteer at the event and fill up staff shortages.

3928 consistently builds new partnerships to improve and expand our outreach programs. We worked with Webster City High School rocketry team, WC Rocketry, to run Rocket Day at the 2019 Story County Fair. Participants designed and launched bottle rockets, learning about engineering while having a blast! 3928 also partnered with the Ames Public Library to run the Month of Cardboard, where we invited our community to build with cardboard and MakeDo kits. 177 people joined us over three consecutive weeks, and we received glowing responses from parents and kids alike.

The COVID-19 pandemic presented unique challenges for our outreach efforts. To combat this, we produced Stay-At-Home STEAM (SAHS), a 27-video series of kids activities designed to promote learning in quarantine. In order to support our local schools, 3928 also reached out to a 5th grade teacher at Kate Mitchell Elementary to supply her students with 50 STEM Kits that we assembled. Each kit contained four activities covering different areas of STEM, teaching math through fractals and experimenting with polarity in lava lamps.

When the 2020 FRC season was unexpectedly cut short, 3928 reached out to teams across the globe to start Virtual Chairman's Exchanges with the goal of creating a replicable process for other teams to follow. After we hosted the first exchange, FRC teams #967 and #1023 used our instructional materials to host their own. In total, 84 people from 20 teams shared their presentations and advice on topics ranging from outreach ideas to Q&A sessions.

From publishing SAHS tutorials to establishing an international Chairman's community, Team Neutrino keeps our legacy thriving around the world.

### **Building a Family**

Foundational to our legacy are the lifelong bonds created between team members. "Though there were many sleepless nights, at the end of it all, I gained so many good friends and great experiences that I don't think I would have found anywhere else," says Former Team Lead Tianxin. With the switch to virtual meetings, we ensured all members continued to feel welcomed by introducing a Buddy Group system. Leadership paired experienced members and NEWtrinos in groups of 5-6 and met biweekly through video calls to ask questions, play games, and complete challenges. At the end of the summer, all members were split into new Buddy Groups so they could meet more people. Freshman Salim says, "Buddy Groups helped me with creating memories and friends, and that made me want to talk and open up more during meetings." From winter parties and team kickball to virtual fun nights and lunchtime calls on our Discord, Team Neutrino exemplifies family.

Our legacy will continue to be forged by the people we inspire, both within and outside our team. We know that the more students we can inspire through FIRST, the more will be encouraged to thrive in STEM and shape the world into what they dream it to be. Student leader Quinn summarizes our mission well: “With every outreach event we attend, kid we mentor, and student we welcome, we’re building a future generation of innovators who will be the next catalysts for change, creating a lasting legacy of growth and inspiration.”