

Robotics Small Business & Entrepreneurship | Course Overview

Year-Long Course Outline with CTE Competencies

Equipment Requirements – XRP robot or *FIRST* Tech Challenge Control System, 3D Printer or other fabrication tools, accounting software, design software

Course Description

This year-long course positions a *FIRST* robotics team as a student-run business enterprise, where students develop and manage all aspects of a sustainable organization. Students apply entrepreneurial and business principles to operate their team, focusing on financial planning, sponsorship development, marketing, operations, and community engagement.

Throughout the course, students build a comprehensive *FIRST* Team Business Plan that includes budgeting, fundraising strategy, brand development, stakeholder engagement, and long-term sustainability planning. Students analyze real costs associated with robotics programs, develop revenue strategies, and manage resources to support team operations.

Emphasis is placed on building a strong community ecosystem, where students cultivate partnerships with sponsors, schools, industry, and local organizations to create mutual value. The course integrates work-based learning experiences through authentic tasks such as sponsor outreach, event planning, financial tracking, and public presentations.

By the end of the course, students will demonstrate the ability to operate a team as a business, communicate its value, and ensure its sustainability through strategic planning and community engagement.

Course Outcomes

COMPETENCY	STUDENT OUTCOMES
Develop and Implement a <i>FIRST</i> Team Business Model	Students will design and refine a business model that defines the team’s value proposition, key partners, resources, revenue streams, and cost structure, and apply it to guide team decision-making.
Apply Financial Literacy and Business Accounting Principles	Students will create and manage a detailed team budget, track income and expenses, analyze costs, set fundraising targets, and use financial data to make informed decisions about team operations.
Apply Entrepreneurial Mindset and Opportunity Recognition	Students will identify problems, needs, and opportunities within their team and community, and apply entrepreneurial thinking to improve team operations, outreach, and sustainability.
Conduct Market Research and Customer Discovery	Students will research and analyze potential sponsors, partners, and community stakeholders, using surveys, interviews, and data collection to understand needs and align team value to those audiences.
Create Branding, Marketing, and Communication Strategies	Students will develop a cohesive team brand, create marketing materials, manage digital presence, and communicate the team’s impact and value to sponsors, judges, and the community.
Analyze Data to Drive Business and Team Decisions	Students will design systems to collect and analyze data related to fundraising, outreach, and team performance, and use insights to improve strategy, efficiency, and impact.
Plan and Manage Business Operations and Projects	Students will apply project management and operational planning skills to organize team activities, manage timelines, allocate resources, and improve workflow efficiency.
Develop Pricing, Fundraising, and Revenue Strategies	Students will design and implement revenue strategies such as sponsorship packages, fundraising events, product sales, or service offerings, applying concepts of pricing, value, and return on investment.
Demonstrate Sales, Pitching, and Negotiation Skills	Students will develop and deliver sponsor pitches, create proposals, respond to stakeholder questions, and negotiate support by clearly communicating value and impact.
Apply Legal, Ethical, and Social Responsibility Practices	Students will evaluate ethical considerations, understand basic business structures and responsibilities, and ensure transparency and accountability in team finances and partnerships.
Build and Sustain a Community Ecosystem	Students will identify and engage key stakeholders—including sponsors, schools, mentors, and community organizations—and develop long-term partnerships that support team sustainability and mutual value creation.
Develop and Present a <i>FIRST</i> Team Sustainability Plan	Students will create and present a comprehensive sustainability plan that includes a business model, financial projections, sponsorship strategy, outreach impact, and long-term growth goals.
Collaborate in Organizational Leadership Roles	Students will assume leadership roles within the team enterprise, demonstrate accountability, delegate responsibilities, and contribute to a positive and productive team culture.

Industry Certifications

- [Certiport: Entrepreneurship & Small Business](#)
- [Certiport: Communication Skills for Business](#)
- [Certiport: PMI Project Management Ready](#)
- [Salesforce: Certified Tableau Desktop Foundations](#)

[FIRST Training](#) learning content that can be used to implement this course.

FIRST Robotics Competition Guided Experience	
Module 1: Intro to FIRST Robotics Competition	Module 7: Kickoff
Module 2: How does FIRST Robotics Competitions Work?	Module 8: Design and Mechanical
Module 3: Intro to CAD and 3D Printing	Module 9: Programming & Electrical
Module 4: Fabrication Tools and Safety	Module 10: Business and Media
Module 5: Rapid Prototyping	Module 11: Preparing for Competition
Module 6: Preparing for Build Season	Module 12: Season Wrap-up

Standards Alignments

Organization	Aligned Standards
NGSS	HS-ETS1-1, HS-ETS1-2, HS-ETS1-3, HS-ETS1-4, HS-PS2-1, HS-PS3-3
ISTE	1.1.a, 1.1.c, 1.2.a, 1.4.a, 1.4.b, 1.5.a, 1.5.b, 1.6.a, 1.6.b, 1.7.b
ITEEA (STEL)	1M, 2P, 3L, 4J, 5I, 6F, 7K, 8K, 9L, 10M
NIMS	Measurement Materials & Safety (MMS), Industrial Technology Maintenance Awareness, Electrical Systems (Fundamentals), Quality & Continuous Improvement, CNC Operations (Intro), Manufacturing Processes, Workforce Readiness
NBEA	Information Technology II.A, Information Technology III.A, Communication III.A, Management III.A, Career Development I.B
ACTE-CRP	CRP1, CRP2, CRP4, CRP5, CRP6, CRP7, CRP8, CRP9, CRP10, CRP11, CRP12