

1 INTRODUCTION

1.1 WHAT IS THE FIRST ROBOTICS COMPETITION?

The FIRST Robotics Competition is an exciting program that pairs teams, sponsors, colleges, and technical professionals with high school students to develop their solution to a prescribed engineering challenge in a competitive game environment. The program has resulted in life-changing, career-molding experiences for its participants. It is also a lot of fun.

In 2004, our reach will expand to over 23,000 students representing approximately 930 teams. These teams will come from almost every state in the U.S., as well as from Brazil, Canada, Great Britain, and Mexico. FIRST has truly become an international program and is continuously growing. These teams will participate in 26 Regional Competitions and the annual Championship Event. The competitions combine the practical application of science and technology with the fun, intense energy, and excitement of a championship sporting event.

This year's challenge will be presented at the 2004 Competition Kickoff on January 10, 2004. All teams will be shown this year's game field for the first time and will receive a kit of parts and the game rules and regulations. The Kit of Parts will include motors, sensors, shafts, bearings, and other materials that teams can use in the design and construction of their robots. They will also receive a new, enhanced multi-channel radio control system and a 12V battery power supply. The kit is meant to provide a level starting point for all teams. The game rules also indicate additional items teams can purchase. When you bring dedicated, enthusiastic students, teachers, engineers, and other professionals together, they will produce a wide range of amazing machines that are competition ready in six weeks of construction time.

1.2 GRACIOUS PROFESSIONALISM, A FIRST CREDO

Dr. Woodie Flowers, FIRST National Advisor, asks and provides his view regarding the question, "Why do FIRST folks talk so much about that phrase?"

Quoting Dr. Flowers, "Obviously it would not make sense to endorse "asinine professionalism" or "gracious incompetence." It is, however, completely consistent with the FIRST spirit to encourage doing high quality, well informed work in a manner that leaves everyone feeling valued. Gracious professionalism seems to be a good descriptor for part of the ethos of FIRST. It is part of what makes FIRST different and wonderful.

Gracious professionalism has purposefully been left somewhat undefined because it can and should mean different things to each of us. We can, however, outline some of its possible meanings. Gracious attitudes and behaviors are win-win. Gracious folks respect others and let that respect show in their actions. Professionals possess special knowledge and are trusted by society to use that knowledge responsibly. Thus, gracious professionals make a valued contribution in a manner pleasing to others and to themselves.

In FIRST, one of the most straightforward interpretations of gracious professionalism is that we learn and compete like crazy, but treat one another with respect and kindness in the process. We try to avoid leaving anyone feeling like they are losers. No chest thumping barbarian tough talk, but no sticky sweet platitudes either. Knowledge, pride and empathy comfortably blended.

Understanding that gracious professionalism works is not rocket science. It is, however, missing in too many activities. At FIRST, it is alive and well. Please help us take care of it.

In the long run, gracious professionalism is part of pursuing a meaningful life. If one becomes a professional, and uses knowledge in a gracious manner, everyone wins. One can add to society and enjoy the satisfaction of knowing that you have acted with integrity and sensitivity. That's good stuff!"

1.3 THE 2004 GAME – “*FIRST FRENZY: Raising the Bar*”

Teams will become frenzied as they strategize on whether their robots will negotiate IR beacons during the Autonomous Period, herd small balls to Ball Corrals, cap large balls on goals, move mobile goals, climb steps or attempt to hang from the Pull-Up Bar. The object of the game is for teams’ robots to trigger the Ball Release during the first 15 seconds, collect balls and feed them to the Human Players who will throw them into the goals. Robots will try to cap the goals with large balls to double the point value contained in that goal and attempt to end the match hanging from the center Pull-Up Bar. The final score is the result of adding small ball points in the goals, doubling the points for goals that are capped, and adding 50 points for any robot that is hanging from the bar.

Each match will feature two-team alliances playing from opposite ends of the playing field. The robots from each of the four teams will be placed in starting positions straddling the white lines on the carpet in front of the drivers. The robots will be allowed 15 seconds to function autonomously, without driver control of any kind, to race to the Ball Tees, remove the balls and activate the Ball Release mechanism at their end of the field. After the “Autonomous Period,” the robots will be under complete control of their drivers for the remaining 1 minute and 45 seconds of the match. If the Ball Release is not activated during the Autonomous Period, it will automatically activate at the 45-second mark of the match.

This year’s game requires excellent coordination between the robots and very accurate Human Players. With multiple ways to score points, it will be necessary to track your score as well as your opponent’s score and make critical decisions near the end of the match. There will surely be a frenzy of activity as the clock winds down.