

FIRST ROBOTICS TEAM 4909 - BILLERICA BIONICS

WEEK 4 NEWSLETTER

WEEK 4

Snow Problems

New England weather has been in full swing this week. Starting back on the Saturday prior to this week, snow warnings were beginning to be sent out. Then, on Tuesday, a massive snowstorm hit. It began snowing late Monday night through Tuesday, leaving us with close to two feet of snowfall, on top of whatever we had before from last week's snow that had not melted yet. As a result, road conditions were treacherous on Tuesday. However, even after the driving ban was lifted on Wednesday, many schools and roads had not been plowed so that there was still a school cancellation. So, all and all this week, we missed two full days of productivity and a few hours from Monday from the impending storm. Needless to say, it was difficult to get work done this week, but some



progress was still managed.

All the teams were working in tandem this week trying to get a

driving chassis rolling. Mechanical fabricated all components necessary to make a driving chassis and made it happen. The tuff-box nano gearboxes were installed with mecanum wheels on each axle. The perforated plastic board for the electrical components was cut and installed, complete with



crossbeam belly supports. Electrical took the board, and laid out all of the components then installed them. Meanwhile, programming had been hard at work piecing together code for mecanum drive for a basic driving setup without any sensors. Then, at the dying hours of the Saturday meeting- we had a driving robot... in the sense that if you touched the joystick, it moved. With now a solid base chassis, programming can perfect their mecanum code and all of the sensors and mechanical and electrical can get cracking at the pulley lift and pneumatic arm. At the end of week five, we have hopes for a complete robot.

HELPFUL LINKS



Team4909.weebly.com

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COMMUNITY CORNER

Junior Robotics

Here at Billerica Bionics, we have a strong belief that we should give back to the community. Our mission is to help create the next generation of engineers, in part, by assisting the various junior robotics teams here in Billerica. We work hard to in-spire the next generation to use and to gain more knowledge of Science, Technology, Engineering, and Math (STEM) in order to benefit themselves as well as the world around them. We have been mentoring the VEX robotics teams at the Marshall and Locke middle schools in addition to the First Lego League (FLL) teams at the Billerica Recreation center as a part of this.



The Marshall Middle school's VEX team is currently embarking on their first year as a rookie team. The team was founded to be one of the school's various extracurricular activities, and thus only meeting once a week. However, upon receiving their VEX kit, the two teachers who mentor the team quickly realized that only one day a week for one hour at a time would not be enough to set up a team as well as to build a robot. After winter break they moved the meetings to two days a week and decided to

follow our team's model of organization. This consists of teams based on the kind of workflow they handle: business, mechanical, electrical, and programming. They have worked very hard this season and their robot is nearly ready for this sea-son's competitions.

The Locke Middle school's VEX team has also been started fairly recently. Last year, an 8th grade science teacher by the name of Mrs. Parker, founded the Locke Middle School VEX robotics team in hopes of inspiring future engineers, much like ourselves. The team was made up of 7th and 8th grade students with a passion for robotics. With the help of some current Bionics team members such as Edmond and Nick, within a few days, the rookie VEX team had completed the default robot design. Upon hearing the rules of



this year's VEX tournament, they had to make some slight modifications to their robot. Soon after, the middle school students drove to Quinsigamond Community College for their very first VEX Robotics Tournament. The youngsters got a first look at some of the more advanced robot designs and immediately began thinking about how cool their robot design for next year was going to

be. All in all, they had done well for a rookie team, placing 33rd in the rankings.

The two FLL teams at the recreation center were other robotics teams we also mentored this year. The learning environment in which they are in is perfect for these future engineers. They are challenged by having to follow the principles of the engineering and design process in order to complete their task, much like our team, but instead by using Lego Mindstorm kits. It helps the kids learn to work as a team to accomplish objectives and build fundamental teamwork skills that will help them as they move on to the FIRST Robotics Competition (FRC) and eventually, the real world.

It is our continuing mission not only as members of the FIRST community, but also as members of the Billerica Community, to prepare future generations for this



technologically advancing world, no matter how much we can. And you should too! Make sure to keep your eyes peeled for rookie robotics teams in your town, we're sure they could use your support!

Team Updates

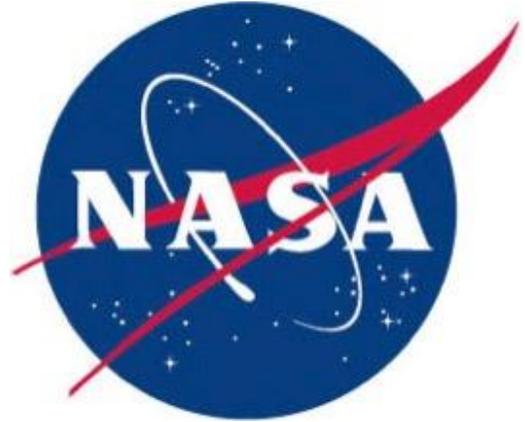
Team Division	Accomplishments	Plan for Next Week
Mechanical	<ul style="list-style-type: none"> Assembled the base chassis with mecanum drive Decided on where the support struts and elevator will be mounted on frame <ul style="list-style-type: none"> How to mount them Decided that they would be telescoping to comply with travel configuration Purchased... <ul style="list-style-type: none"> Pins to mount arms Cable for pulley Pulley Modeled the Pulley system in CAD Added moveable arm to the CAD model Cut perforated plastic for electrical to mount components Cooperated with electrical on installing board onto robot 	<ul style="list-style-type: none"> Complete the physical aspect of the robot
Electrical	<ul style="list-style-type: none"> Wired mecanum drive onto the chassis Wired gyroscope for the programmers to test Wired the encoder for programmers to test Put pneumatics onto the prototype 	<ul style="list-style-type: none"> Install pneumatics on the robot Wire the pulley motor Install encoders on the robot
Programming	<ul style="list-style-type: none"> Finished basic tele-operated control (mecanum drive train, clamp, elevator) Started autonomous plans Brainstormed semi-autonomous commands ideas Made a shell for final robot code with everything in Robotbuilder Integrated test codes into final code 	<ul style="list-style-type: none"> Fix teleop code bugs Continue working with encoders Program the semi-autonomous commands Fine tune the mecanum drive Debug everything as necessary
Business	<ul style="list-style-type: none"> A high resolution logo has been obtained, finally! Have done and are in the process of retrofitting all Bionics content to have our new logo and new team information Posters, Banners, T-shirts, and Website are all making progress 	<ul style="list-style-type: none"> Complete all of the awards Get a completed business plan rolling Finish up all of our ongoing projects

Upcoming Schedule

Date	Competition Name	Competition Location
March 6-8	Reading District Event	Reading Memorial High School 62 Oakland Road Reading, MA 01867
March 26-28	Northeastern District Event	Matthews Arena 238-262 St. Botolph Street Boston, MA 02115

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