

# March 2005

## MAINE'S SOURCE FOR ENGINEERING AND PROGRAMMING EVENTS

### UPCOMING EVENTS

- March 31<sup>st</sup>** *UPDATED*  
Deadline for Spring Track Meet Registration
- April 1<sup>st</sup>** *NEW*  
Principles of Robotics
- April 8<sup>th</sup>**  
Deadline for HS Registration
- APR 30<sup>th</sup>**  
Spring Track Meet
- MAY**  
Registration for the FLL starts
- MAY 21<sup>st</sup>**  
High School Robotics & Programming Competition
- July and August**  
Summer Robotics Camps
- September-December**  
FIRST™ LEGO® League

### About Maine Robotics:

Maine Robotics is home to Maine's FIRST™ LEGO® League, Maine's summer robotics and engineering camps for youth, the Spring LEGO® track meet, and the High School Robotics and Programming Competition.

Maine Robotics believes that only by working with Maine's youth from an early age and continuing through their entire educational experience can we expect our youth to successfully grow into the fields of science, engineering, computers, and technology.

Our youth want the experiences, they are ready for the tasks and lives that lay ahead of them, but we as a state and a people must help them realize this potential for their sakes as well as the sake of our state's well being.

### Our Recent February Camp

By Tom Bickford

In cooperation with "Learning With Out Borders", an after school program operating out of Milford, Old Town, and Greenbush, Maine Robotics ran a 3 day camp during the winter break.

We had 17 students signed up for the camp ranging from 5<sup>th</sup> to 8<sup>th</sup> grade and included about 1/3 from local home schools as well. The camp met on the UMaine campus from 9:00 am until 3:30 pm and covered the basics of robot design, programming, and a little basic engineering to boot.

We visited the Jordan Planetarium where we saw "Hubble Vision II" as well had a tour of the Advanced Engineering Wood Composites Center.

The camp was funded through grant money and sponsored by Learning With Out Borders and CBE, Inc.; a big thanks to Sally Coppus for organizing the funding and recruiting the children.

One child missed the first day of the camp but otherwise it has 100% attendance for all three days. A good time was had by all.

### Principles of Robotics Workshop

April 1<sup>st</sup>, 2005 8:30-3:30  
Wooley Room, DTAV Conference Center, University of Maine, Orono  
\$80, including lunch and 0.6 CEUs.

This workshop is designed to familiarize teachers, coaches, and parents with the LEGO® MindStorms product; the RoboLab programming system; and introduce the different programs sponsored by Maine Robotics.

No prior experience is necessary; however it is highly encouraged that you bring a laptop with you. We have

some, but not enough for all participants. All other equipment is included.

### Maine's High School Robotics and Programming Competition

*May 21<sup>st</sup>, 2005*  
*Brewer High School*  
*Registration required for participation, but event is open to the public*  
*Deadline for registration is April 8<sup>th</sup>*

**NEW!**

Since 2000 youth from Maine's schools and communities have been participating in the FIRST™ LEGO® League and have not had an equivalent opportunity to participate in robotics and programming in High School.

This program is designed to give these students and others with an interest in engineering and programming an opportunity to "show their stuff".

Each team will have the opportunity to build a creation out of LEGO's that operates using the LEGO MindStorms robotics platform. What the creation does and how it performs will be up to the team's imagination.

Designed very much like a science fair, each team will be evaluated and receive feedback on their engineering, programming, and presentation skills.

### Maine Robotics

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207-866-4340  
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bickford@mainerobotics.org

[www.mainerobotics.org](http://www.mainerobotics.org)

## New Yahoo Group

We've set up a new Yahoo group for Maine Robotics and it is open to one and all who want to post discussions, images, etc. about their robots.

Just visit the group at the following link:

<http://groups.yahoo.com/group/mainerobots>

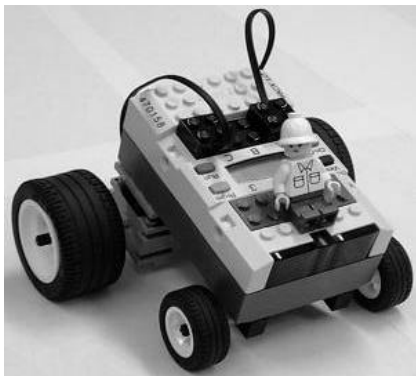
and join in the fun.

## Call for Articles

Maine Robotics would like to offer this space for coaches and teachers who would like to submit articles about how they use robotics in their community or school.

Submissions should be 700 words or less and if they include pictures or diagrams they must be original work and belong to you.

No pictures of children are allowed, sorry. However, pictures and drawings of robots, programs, structures, tools, etc. are greatly encouraged. Submissions may be through e-mail or post. Visit our website for guidelines for submission  
[www.mainerobotics.org/articles.html](http://www.mainerobotics.org/articles.html)



## Maine's Spring LEGO® Track Meet (MSLTM)

April 30<sup>th</sup>, 2005

Brewer High School

Registration required for participation, but event is open to the public.

## REGISTRATION DEADLINE EXTENDED TO MARCH 25<sup>TH</sup>

Since 2000 hundreds of youth across the state have been participating in the

FIRST™ LEGO® League program in the fall. Many of these teams, schools, and children have been looking for a program that can take them beyond the fall and keep them active in their robotics interest.

The track meet is geared toward using more straightforward principles of physics and programming in order to compete in a track meet event. With 6 events including:

1. Slope climbing
2. Table navigation
3. Line following
4. Fastest Robot
5. Strongest Robot
6. Strongest bridge (non-robotic)

There is something for everyone and we are working with any interested teacher or group in educating our youth on the basic principles of physics, engineering and programming needed to successfully compete this year.

The program is good for either experienced FLL teams, or new groups starting out for the first time.

### STRONGEST ROBOT EVENT:

Here are some images of what the strength cart looks like. We will have two of these carts at the track meet. They are sturdy, simple to make, and the cart itself can be pulled by most robots (without gearing or special traction considerations).



The cart platform is 12" wide by 20" long and the wheels are non-swivel 2" hard plastic wheels. The loop is a 1-3/4" U bolt with 1-1/2" of clearance from the floor (1/4" thick steel).

**Comments:** I built a treaded robot made as solid (for weight) as I could and added the two cans of juice for ballast and was able to pull about 25 lbs across the floor. See the picture on the back page. Remember you have to worry about strength AND traction (friction) in order to have a successful robot.

When I tried a 1:1 gear ratio treaded drive system (like the Tank-Bot) I could only pull the cart itself. Adding any weight made it impossible to pull (or very difficult).

I've also noticed a tendency for the robots to pull to the side as they go along. The cart can't turn because of the wheels, so make sure your robot goes as straight as possible.

Good Luck!

## The FIRST™ LEGO® League Tournament

### December 2005

The FLL is a rapidly growing international program designed to foster an interest in science. FIRST means For Inspiration and Recognition of Science and Technology and was founded by famed US inventor Dean Kamen. It was first piloted in 1998 and Maine has been a part of the program since 2000. In 2004 there were some 40,000 children across North America participating in the program, making the FLL one of the largest, and certainly one of the fastest growing programs of its kind.

Each fall teams with children from 9 to 14 build, test, and program robots to perform a series of thematic missions on the year's playing field. The teams also research a related topic, prepare, and then present their hypothesis, findings, and recommendations for using robotics to improve a condition they have identified.

The 2005 theme will be "Oceans Odyssey" and focus on our interdependence with the oceans and seas of the world. While picked long before the December catastrophe in the Indian Ocean it is a timely matter that will affect everyone on the planet over the coming year.

Registration for teams starts at the beginning of May and if interested you

should check out our website and the [www.firstlegoleague.org](http://www.firstlegoleague.org) website for additional information.

### Summer Robotic Camps

#### *Beginner Camps: Weeks of*

*July 7<sup>th</sup>*

*July 25<sup>th</sup>*

*August 1<sup>st</sup>*

*August 8<sup>th</sup>*

#### *Advanced Camps: Weeks of*

*July 25<sup>th</sup>*

*August 15<sup>th</sup>*

#### *Orono and Bangor Area*

*Eligible for Camp Bangor funding*

*5 day weeks from 9 to 4*

We have run robotic camps for three years and are looking forward to our fourth year with anticipation.

Each week children from 9 to 14 join us for a week of learning, building, and fun. While an academic camp in nature the program is more about having fun while learning than anything else.

Children work in small groups, usually two in a group, and build robots to perform missions at the camp. The missions start off easy and get progressively more complex as the week goes on. Staff is on hand to help children move on with new skills as they master earlier ones.

Most children have built their first successful robot by the end of day one and are doing programming for simple out and back type movements. By the

end of the third day, most are programming the robot to do more complex things, usually involving sensors that can “see” the robots environment.

Advanced camps are held as well for children who have been involved with the program before and need more challenging and independent projects.

For more information and specific dates please go to our website.

### What can these robots do?

By Tom Bickford

It would be easier to ask “What can’t these robots do”. But let’s give some examples of what they can do.

- They can operate motors and lamps using their output ports
- They can take input from a variety of sensors
- They can log data for short or long periods of time (log the temperature in your classroom every 10 minutes for a day)
- They can utilize pneumatic controls, pumps, and cylinders to do work
- They can talk to each other using IR communications
- They can talk to the computer (while running) to share information or ask for new instructions

- They can post their information to the web in real time through their computer and make that information available to anyone
- They can be used to model existing or new equipment or test out new concepts. (Idea, model, build, test)
- Use a USB camera and included software to “see” the environment around the robot

#### **What they can’t do:**

- Don’t submerge them in water
- Don’t drop them from any height and expect them to survive
- Pull a truck (at any perceivable rate)
- Bulldoze down a house
- Run for a year on 6 AA batteries

### Partnering With Others

Learning Without Borders is an after-school program with activities to encourage interest and achievement in mathematics, science and engineering. The program runs at middle schools in Greenbush, Milford and Old Town. Students do a variety of problem-solving tasks, take part in events sponsored by **Maine Robotics**, join others in Zoey’s Room technology club for girls, and compete in a local tournament for Chess Teams. For more information contact Sally Coppus at [scoppus@aol.com](mailto:scoppus@aol.com)

### **REQUEST FOR MORE INFORMATION**

(Please check out our website for more detailed information and registration information)

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

E-mail address: \_\_\_\_\_

Phone: \_\_\_\_\_

School or organization: \_\_\_\_\_

#### **Interested in:**

- Spring LEGO Track Meet (Grades 4 to 8)
- High School Robotics and Programming Competition
- Summer Camp Programs (Ages 9 to 14)
- FIRST™ LEGO® League (September to December - Ages 9 to 14)

or call us at

207-866-4340

Or e-mail us at

[bickford@mainerobotics.org](mailto:bickford@mainerobotics.org)

Send To:

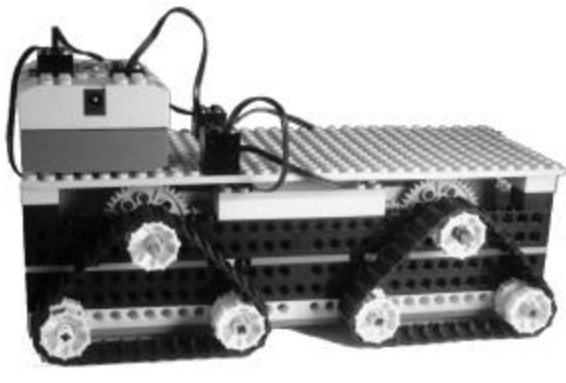
Maine Robotics  
167 Bennoch Road  
Orono, ME 04473

**Dear Technology Coordinators, Computer Specialists, and Teachers,**

**The programs offered by Maine Robotics are designed to foster interest and skills in computer science, engineering, physics, and technology in general. Your school can gain so much by joining in! Please share this information with others at your school. Bring it to the attention of your students, your parents, and see what their reaction is.**

**Our goal is to excite and teach the students, campers, and participants and keep them coming back for more; more from the programs, more from school, and more from life.**

- ❑ **Fun for all ages of children**
- ❑ **Learning to be engineers, programmers and scientists through hands on experimentation**
- ❑ **Programs for the spring, summer and fall**



**FIRST LEGO League  
Spring LEGO Track Meet  
HS Robotics & Programming  
Summer Camps**