

**Summer Junior Engineering and Mathematics Program  
With Lego Robotics, Problem Solving, Puzzles, and Modular Origami  
at the University of Southern Maine, Portland, Payson Smith Hall  
Grades 3-8**

Organized by MMSETS

Session 1: June 25- 29, Session 2: July 9-13, July 23-27  
8:00 a.m. – 4:00 p.m.

Students are exposed to an incentive program to grasp science, technology, engineering, and mathematics concepts with hands-on, naturally motivating building sets, programming software, and curriculum relevant activity materials.

We offer challenges and adventure activities that build confidence, cooperation, teamwork, creativity, trust, decision making, conflict resolution, resource management, communication, effective feedback, and problem solving skills and help students see the connection of modular origami and mathematics to robotics design and modular origami construction.

## LEGO ROBOTICS

Using the new Mindstorms NXT kit, students use ideas from Junior Engineering and are encouraged to work in groups of two. Robotics lets students use ideas from engineering and mathematics to build vehicles, intelligent machines, scientific tools, and interesting displays. The Lego Robolab equipment includes gears, lamps, motors, sensors, many structural and connecting parts, and RCX's (small computers that are built right into projects). Once students construct a robot, the students can program its behavior and interactions with the environment.



## PUZZLES AND PROBLEM SOLVING

Using a variety of mental and manipulative puzzles, we help students understand the logic of puzzles. With this, the students are participating in an enjoyable group activity.

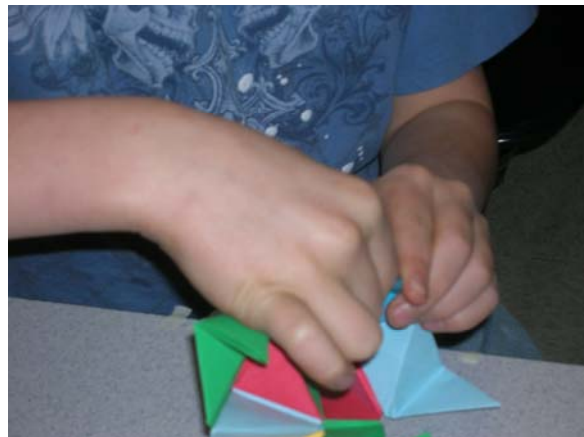
Our activities are based primarily on the Singapore National Mathematics Curriculum and partly the New Cambridge Mathematics. One of our aims is to raise children's confidence in mathematics by developing self-esteem.

The crucial role of our activities involves the students learning strategies to:

- look for patterns,
- think logically,
- simplify the task,
- communicate the task, and
- evaluate what they have done and ask "what if" questions.

## MODULAR ORIGAMI

Modular Origami, or unit origami, is a paper folding technique which uses multiple sheets of papers to create a larger and more complex structure than would be feasible using single-piece origami techniques. The external appearance of modular origami is artistic, often floral; it is hard to believe that any spatial geometry is involved. The participants learn features and connections of Platonic and Archimedean solids and their connection to crystals.



Modular origami is applicable from grade three through graduate school, assists group work, fine motor skills, discipline, planning aesthetics, and spatial reasoning.

## FACULTY

**Richard Eason, PhD**, associate professor of Electrical and Computer Engineering, has been the academic advisor of the Junior Engineering Program, a pilot, a life long puzzle designer and collector, and an eagle scout.

**Eva J. Szillery, PhD**, a mathematician, the academic director of the Junior Engineering programs is the Maine State Director of the American Mathematics Competitions. She is the recipient of the University of Maine 2005 Educator Recognition Award for Programming Excellence of the MMSETS MJETS Programs.

**Junior Faculty:** two electrical and computer engineering students and two former campers

## SCHEDULE

8:00 a.m. - 4:00 p.m.

Parents are responsible for the transportation of their campers.

For more information Contact:

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Phone: 207-356-0207

# REGISTRATION FORM

## JUNIOR ENGINEERING SUMMER PROGRAM

### FOR STUDENTS IN GRADES 3 - 8

AT THE UNIVERSITY OF SOUTHERN MAINE, PAYSON SMITH HALL, PORTLAND

Session 1: June 25-29, Session 2: July 9-13, Session 3: July 23-July 27

(Please circle your choice)

Student's name:	
Grade	
Address	
Adult Contact	
Home Phone #	
Cell Phone #	
E-mail	

### Registration is on first-come, first-served basis

Fee: \$250. Make checks payable to MMSETS.

Mail check and completed registration form to:

E. Szillery.

MMSETS

P.O. Box 496

Orono ME 04473

\$45 of the registration fee is nonrefundable in case of voluntary withdrawal. Within 21 days of the program start date, the entire registration fee is non-refundable. Exceptions are made for cases of serious illness, accompanied by a doctor's note. Upon receipt of your registration we will mail you the MJETS Release Form, Camp Policies, and Emergency Contact Information form. Parents are responsible to return these forms three days before the start of the program.

