

*Coming Soon!*

Interactive

# Modular Origami

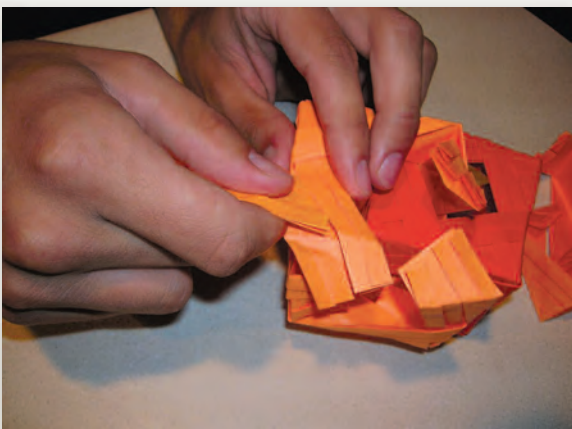
Exhibit



*University of Maine at Presque Isle Library*

The modular origami models displayed here were created by **Eva Szillery**. This exhibit shows her work and some of the work her students made under her direction.

\*see other side for information on Modular Origami workshops to be held in Presque Isle\*



## What is Modular Origami?

Modular origami involves several identically folded paper units (or modules) assembled into a finished model. Modular origami is really geometric modular origami, often polyhedral geometric origami. As you can see from the examples on display, the external appearance of this origami is artistic, often floral. It's hard to believe that any geometry is involved in the construction. However, most models are based on the Platonic or Archimedean solids, others on fractals or Hyperbolic paraboloids. In fact, there is an easy way to fold an approximation to a (partial) hyperbolic paraboloid out of paper.

## How is Modular Origami used in the world around us?

The mathematics of modular origami has been analyzed in-depth by mathematicians, engineers, scientists and architects. Most folding and unfolding problems are attractive from a pure mathematical standpoint, from the beauty of the problems themselves. Nonetheless, most of the problems have close connections to important industrial applications. Linkage folding has applications in robotics, hydraulic tube bending, and has connections to protein folding. Protein folding is a major problem of interest in biology and physics. The standard problem is designing synthetic proteins that fold stably into a particular configuration. Paper folding has applications in sheet-metal bending, packaging, and air-bag folding. Unfolding polyhedra has applications in manu-





facturing, particularly sheet-metal bending. Computational origami is a recent branch of computer science studying efficient algorithms for solving paper-folding problems.

## How can Modular Origami be used in the classroom?

Modular origami is a hands-on learning opportunity that can be used with a wide range of students – from third graders to graduate school students – to reinforce basic mathematics and teach highly complex geometric concepts. Lessons can start with simply exploring counting patterns and symmetries and expand to topics in combinatorics. Along the way, students gain experience in learning planning, discipline, group work, and fine motor skills.

## About the Creator of the Exhibit Models

EVA SZILLERY obtained her Ph.D. in Mathematics in Hungary at the prestigious Eotvos Lorand University. She started folding modular origami as an application for the teaching of mathematics. Szillery is the Director of the Maine Junior Engineering Technical Society [MJETS] and the State Director of the American Mathematics Competitions. She is also the founder of the Maine Origami Society. In 2005, Szillery received the University of Maine Pulp and Paper Foundation Educator Recognition Award for Programming Excellence for her work with the MJETS and the Maine Mathematics, Science and Engineering Talent Search programs.

## Participate in a Modular Origami Workshop!

Eva Szillery leads origami groups in Lewiston, Bangor, and Orono, and she will offer two workshops in Presque Isle, scheduled from 3-5:30pm and 5:30-8pm on Wednesdays in the UMPI Library Conference

Room. If you wish to join the Presque Isle group, contact Susan Pinette at 768.9452 or [susan.pinette@umpi.edu](mailto:susan.pinette@umpi.edu).

The class is accessible for beginners; no previous folding experience is necessary. Interested students ages 10 - 94 are invited; ages 10 & 11 should be accompanied by an adult. Students will pick up the basic principles of modular origami as the group proceeds with the models. Students often choose models from the exhibit and learn the folding and the underlying concepts, ranging from geometry and connections to crystals to architecture, biology and chemistry. However, you are not required to have an interest in these connections in order to take part in and enjoy these workshops. Everyone is welcome, from “newbies” to master folders.

Any changes to location, date, or time will be posted on Maine Origami Society's website [www.mmsets.org](http://www.mmsets.org). There are no fees or dues to attend; the only requirement is an interest in origami and/or paper arts. ★



Eva Szillery

