PROGRAM DESCRIPTION
The Pre-Engineering Camps strive to develop and enhance students’ problem solving and critical thinking skills, provide an opportunity for creative expression, and foster students’ curiosity about science and technology through fun-filled engineering projects. Students are encouraged to use what they know about science, math and engineering to explore this new challenge. It is a hands-on, project-based program designed to engage and inspire youth in the areas of math, engineering, science and technology. The University of Iowa, College of Engineering will be offering the following pre-engineering camp:

- **Lego Simple Machines (Grades K-1)**
  
  This program is designed to have a perfect mixture of fun and learning, using LEGO Simple Machines. Students will have the opportunity to discover basic physical science concepts such as gears, pulleys, levers, and wheels and axles; and discover their hidden talents as they design, and build their own creation.

- **Lego Learners (Grades 2-3)**
  
  This program is designed to have a perfect mixture of fun and learning, using LEGO WeDo Robots. Students will have the opportunity to explore new adventures, learn the basic concepts of robotics, and discover their hidden talents as they design, build, and program their own creation.

- **Lego Robotics I (grades 4-6)**
  
  This program is designed to introduce students to the principles of robotics, computer programming, and teamwork. Students will have the opportunity to use their imagination and critical thinking skills to design, program and control fully functional robotic models that will accomplish specific tasks by using software to plan, test and modify sequences of instructions. The camp will focus on pushing an opponent’s robot out of a sumo ring.

- **Lego Robotics II (grades 4-6)**
  
  Students will design, build and program autonomous robots using the LEGO Mindstorms Robotics kits. Participants will work in a team environment to create a robot to complete various missions. Using an EV3 brick, servo motors, and various sensors, the robots will move on wheels or treads. Besides having fun, participants will learn problem solving, communication and team work skills. As well as learning functional programming, principles of simple machines, gearing and mechanics.
• **Tetrix Robotics (grades 7-9)**

   Students will design and build a robot working in pairs using Tetrix Robotics Technology, remote controlled robots. Students will delve into authentic scientific research and a hands-on robotic design. A robotic challenge at the end of the week will put their skills to the test. Instruction will include basic engineering skills and how input/output devices can be used to affect the behavior of their very own robots.

**PROGRAM LOCATION**

The summer day camps will be held in classrooms within the Seamans Center for Engineering Arts & Sciences (103 South Capitol St.) on the University of Iowa Campus.

**PROGRAM WITHDRAWAL AND REFUND POLICY**

- If you would like to withdraw your child from a program from which he/she is already registered, any request should be made in writing by sending an email to tracy-peterson@uiowa.edu prior to April 10, 2015.
- Refunds for summer day camp registrations are non-refundable after April 10, 2015.

**WHAT TO BRING AND WHAT TO WEAR**

Please dress your child appropriately, as sometimes a thin sweatshirt may be necessary.

- Students should wear closed-toe comfortable shoes as we may be spending time outdoors, walking throughout the building.
- Please note all personal items and clothing should be labeled with camper’s full name.
- In an effort to build the kind of community that is so integral to a memorable camp experience, we ask that cell phones, music players, and personal gaming systems be left at home.

**PICK-UP AND DROP-OFF INFORMATION**

Students may be dropped-off and picked-up in the John Deere Plaza Entrance of the Seamans Center, known as the 2nd floor lobby, which is directly across Capitol Street from CVS Pharmacy in the Old Capitol Town Center. *Please be aware, there is no parking permitted along Capitol Street. You may get a ticket if your vehicle is there for a few minutes.* The Seamans Center can be confusing for visitors, and finding temporary parking can be troublesome. Please use the Parking Ramp next to the Old Capitol Town Center for drop-off and pick-up as you will have free 1-hour parking.

- **Morning Day Camps:**
  Students need to arrive no earlier than 8:55am and no later than 9:05am. Students will need to be picked-up no later than 12:10pm. A Pre-Engineering Camps representative will be in the 2nd floor lobby to welcome students in. This event will begin promptly at 9:00am. On each day of camp, we will ask for each parent/legal guardian to sign-in your child when you drop-off them off. If your child will be walking to and from camp, or carpooling, please let us know on the first day of camp - you will need to complete the walking to camp/ carpooling form.
• **Afternoon Day Camps:**

Students need to arrive no earlier than 12:55pm and no later than 1:05pm. Students will need to be picked-up no later than 4:10pm. A Pre-Engineering Camps representative will be in the 2nd floor lobby to welcome students in. This event will begin promptly at 1:00pm. On each day of camp, we will ask for each parent/legal guardian to sign-in your child when you drop-off them off. If your child will be walking to and from camp, or carpooling, please let us know on the first day of camp - you will need to complete the walking to camp/carpooling form.

- Parents/Legal Guardians will be notified if a student has not checked-in within 15 minutes of the start of the camp and/or has not been picked up within 15 minutes of the conclusion of the program. If we are unable to make contact with the parent/legal guardian, we will proceed to the emergency contact you provided when you registered your child. Children that are not picked up by 30 minutes after the end of the program may have to be escorted to the UI campus police station and the department of human services will be contacted for assistance.

- **VERY IMPORTANT:** In the event that a parent or guardian is unable to pick up a child at the program end, we are requesting that you notify us immediately.

**FREQUENTLY ASKED QUESTIONS (FAQs)**

**GOALS**

Pre-Engineering Camps at the University of Iowa are designed to get children excited about science and technology. We hope our camps will:

- Teach the benefits of teamwork
- Expose students to concepts of engineering, architecture, physics and mathematics
- Teach them valuable communication skills
- Develop and enhance students' problem solving and critical thinking skills
- Introduce basic design skills through a hands-on approach
- Provide a culture of sharing and learning from each other

**CAMP FORMAT**

Projects typically start with an introduction and short presentation by the instructor followed by a design/building assignment. Students will have access to thousands of pieces of LEGO materials, or design kits to use in creating their engineering projects. Students are introduced to engineering terminology that they are encouraged to use throughout the class when identifying pieces, posing questions, or assisting each other. Instructors circulate and assist the children in realizing their project goals. When the participants have satisfied basic requirements of a project, they are encouraged to further explore engineering applications of the principles and construction methods by inspecting, testing, modifying, and rebuilding.

**CURRICULUM**

What are some of the concepts covered in your child’s pre-engineering camp?

- Our program features 16 principle models, four main models and four problem-solving models that enable students to investigate and understand the operation of simple and compound machines found in everyday life: gears, wheels and axles, levers and pulleys.
- Key Learning Values:
- Observing and investigating simple machines: gears, wheels and axles, levers and pulleys.
- Following a design brief as part of the engineering design process
- Investigating and working through observations, reasoning, predicting, reflecting and critical thinking

**PROJECT PICTURES**
Can we get pictures of our child’s final projects?
- At the end of each session, parents are invited to a “Demonstration Event”. During this event, each group of children will have an opportunity to showcase their project to the parents. Please check your email for the invitation.

**PROGRAM SCHOLARSHIPS**
Scholarships will be awarded to families that need assistance and financial support for their child to attend this program. Please email Tracy Peterson, tracy-peterson@uiowa.edu or call 319-335-5776 to request and application.

**WAITLIST FOR PROGRAMS**
- Once a session is filled, a waitlist for that session will be established and kept updated internally
- No deposit or payment is required until a space is offered to a student
- Should a space become available, program staff will contact families on the waitlist to fill the space