

Creative Design and Engineering Syllabus

Geek Cred at HEC 25/26

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Objective: To develop a basic understanding of physics, practice fine motor skills, use tool safely, think critically, solve problems creatively, and confidently engage with the world by building and playing.

Note: The following is a detailed outline of the complete course. Activities are subject to change based on the needs of individual classes. E.g. Some classes will struggle with a subject, so we will take an extra week to achieve mastery.

FALL SEMESTER

Week 1 (Aug 25-29) - **Shapes.** Tangrams and cutting practice.
Week 2 (Sep 1-5) - **Shapes.** Toothpick and marshmallow 3D shapes.
Week 3 (Sep 8-12) - **Shapes.** Cutout and glue 3D Shapes. Create a paper village.
Week 4 (Sep 15-19) - **Shapes.** Origami.
Week 5 (Sep 22-26) - **Challenges.** Stacking challenges.
Week 6 (Sep 29-Oct 3) - **Design and Build.** *If I built a House.* Build a house with Lego Bricks.
Week 7 (Oct 6-10) - **Design and Build.** *Billions of Bricks.* Build a skyscraper with Lego Bricks.
Fall Break Oct 13-17
Week 8 (Oct 20-24) - **Simple Machines.** Pinwheel (wheel and axel.)
Week 9 (Oct 27-31) - **Simple Machines.** Catapults (lever.)
Week 10 (Nov 3-7) - **Simple Machines.** Winch/ elevator (pulley.)
Week 11 (Nov 10-14) - **Simple Machines.** Saw, drill, and sand derby cars (wedge and screw.)
Week 12 (Nov 17-21) - **Design and Build.** Decorate and assemble derby cars (wheel and axel.)
Thanksgiving Break Nov 24-28
Week 3 (Dec 1-5) - **Challenges.** Derby (inclined plane.)
Week 14 (Dec 8-12) - **Challenges.** Speed Stacking Challenge.
Week 15 (Dec 15-19) - **Challenges.** Paper Airplane Challenge.

SPRING SEMESTER

Week 1 (Jan 12-16) - **Shapes.** Geoboards
Week 2 (Jan 19-21) - **Shapes.** Play dough Designs
Week 3 (Jan 26-30) - **Design and Build.** *If I built a school.* Design and build a school with Lego Bricks.
Week 4 (Feb 2-6) - **Design and Build.** *Violet the Pilot.* Build airplanes with all kinds of scrap materials.
Week 5 (Feb 9-13) - **Challenges.** Paper Airplane Challenge.
Winter Break Feb 16-20
Week 6 (Feb 23-27) - **Design and Build.** *If I built a Car.* Design and build cars with Lego Bricks.
Week 7 (Mar 2-6) - **Challenges.** Pick your best car design, build it, and race on the inclined plane!
Week 8 (Mar 9-13) - **Design and Build.** Lego Brick Inspiration - build whatever you can imagine!
Week 9 (Mar 16-20) - **Design and Build.** *The Most Magnificent Thing.* Build something magnificent with scraps.
Week 10 (Mar 23-27) - **Design and Build.** Finish your something magnificent with scraps.
Spring Break Mar 30-Apr 10
Week 11 (Apr 13-17) - **Simple Machines.** Balance Scale (lever.)
Week 12 (Apr 20-24) - **Simple Machines.** Soap Sculpture (wedge.)
Week 3 (Apr 27-May1) - **Simple Machines.** Screw Boards (screw.)
Week 14 (May 4-8) - **Simple Machines.** Balloon Car (wheel and axel.)
Week 15 (May 11-15) - **Simple Machines.** Mini Flagpole (pulley.)
Week 16 (May 18-22) - **Simple Machines.** Pinball Machine (inclined plane.)