

## [XPLORE](#)

Xplore GNRG is a wonderful introduction to our award-winning STEAM programs. The workshop model provides the balance between weekly guided seminars on 'green' topics with hands-on projects utilizing the Engineering - Design Process (EDP). The semester split below provides a proper introduction and exploration of GNRG topics and allows students to take both semesters without overlap.

Xplore GNRG is designed around focused monthly workshops that introduce students to cutting edge green engineering and design. The workshops provide the balance between weekly, guided seminars on 'green' topics with hands-on design challenges utilizing the Engineering and Design Process (EDP).

### **Xplore Fall Semester Theme - Power**

1. GNRG Bootcamp - shop/lab safety protocols, materials/equipment, GNRG philosophy
2. Basic Green Technology (solar, wind, micro-hydro, peddle-power, electrical/mechanical systems)
3. Basic biodiesel (chemistry, engineering, physics)

[Steven Johnson TED Talk "Where Good Ideas Come From"](#)

[IDEO Process](#)

## September - BOOTCAMP

C/D 1-3 and C 2-4

	day1	day3	day2	day4
week1	paper tower/shop tour/safety		paper tower/shop tour/safety	
week2	case study: energy use/loss soccet, nanolight and build high rise test / rebuild	finish high rise	case study: energy use/loss soccet, nanolight and build high rise test / rebuild	17 reasons
week3	penny battery	penny battery	penny battery	penny battery
week4	solar ovens inspired research + design	develop prototype feed back materials check field data build test rebuild	solar ovens inspired research + design	develop prototype feed back materials check field data build test rebuild

## October - SOLAR

Solar Thermal and Solar PV

	day 1	day 3	day 2	day 4
week 1	intro inspiration- videos/articles/kickstarters differentiate Thermal / PV <a href="#">Shoebox Solar Oven</a>	Empathy Brainstorm	intro inspiration- videos/articles/kickstarters differentiate Thermal / PV	Empathy Brainstorm
week 2	prototype	test/rebuild	prototype	test/rebuild
week 3	Geography, Physics, and Electrical Engineering		Geography, Physics, and Electrical Engineering	
week 4	build, test, rebuild, evaluate	build, test, rebuild, evaluate	build, test, rebuild, evaluate	build, test, rebuild, evaluate

Solar Design Challenge Resources for Inspiration and Discovery

<http://www.kickstarter.com/projects/search?term=solar>

<http://www.instructables.com/tag/type-id/category-workshop/channel-solar/>

## November WIND

Mechanical, Electrical, Windbelts, VAWT, HAWT???

	day1	day3	day2	day4
wk 1	intro inspiration- videos/articles/kickstarters differentiate mechanical, Electrical, HAWT, VAWT	Empathy Brainstorm	intro inspiration- videos/articles/kickstarters differentiate mechanical, Electrical, HAWT, VAWT	Empathy Brainstorm
wk 2	prototype	test/rebuild	prototype	test/rebuild
wk 3	Geography, Physics, and Electrical Engineering		Geography, Physics, and Electrical Engineering	
wk 4	prep for functional scale prototype	Tday holiday - short week	prep for functional scale prototype	Tday holiday - short week

## December - Micro Hydro and Pedal

Mechanical and Electrical

## January - Kinetic Goldbergs

Exactly what it says!

## **GNRG Xplore Spring Semester Theme-Stuff**

[The Design/Engineering Process in one page](#)

1. GRNG Bootcamp - GNRG philosophy, shop/lab safety protocols, materials/equipment, rapid cycle design challenges
2. Material Re-engineering - fused plastics, product development and design, cradle to cradle philosophy (<http://msi.apparelcoalition.org/#/>)
3. Biomaterial Engineering - Mycelium as replacement for polystyrene
4. Green Plastics – Milk protein and other bio-based plastic formation
5. Basic bags (fused plastics, material re-engineering, cradle to cradle philosophy)
6. Trash Menagerie – a found object Kinetic Sculpture project
7. Urban Agriculture/Aquaponics

Here's the Xplore GNRG rubric for our design challenges

COLLABORATION AND PERFORMANCE EVALUATION RUBRIC

- [Download](#)
- 135 KB