



Sustainable Engineering Trainer board for Quanser Platform Global Design Student Challenges (GSDC) Quanser Challenge #2 – January 10, 2012

The goal of these challenges is to come up with an idea and take it all the way to commercialization. We encourage entrepreneurship!

Deadlines

Deadline for registration of projects is April 1, 2012. The deadline for submission of project reports, presentations (POWERPOINT AND YOUTUBE) is August 1, 2012. Winners will be announced September 1, 2012.

Prizes and Awards

All awards and prizes to the best projects will be presented during the World Engineering Education Forum, October 15-18, 2012, in Buenos Aires, Argentina. Quanser will cover all travel and accommodation expenses for one representative of the winning team.

Sustainable Engineering Trainer board for Quanser Platform

Design and commercialization objectives:

- Design a complete lab concept for a new Quanser product that students can use to learn about sustainable engineering.
- Product concepts will be considered for Quanser's Engineering Training Product Line.
- Meet technical specifications and business objectives provided by Quanser (registered students will receive this information directly from the Quanser Student Contest liaison).
- Provide Innovative and Motivational laboratory experiments designed to excite, stimulate and challenge students.
- Minimum deliverables are:
 - Document describing the research/design methodology followed
 - A Specifications Document articulating the Design Goals and requirements
 - Pedagogical approach proposed for the new laboratory experiments
 - YouTube project presentation video

- A hardware prototype that can demonstrate feasibility (Breadboard or PCB implementation is highly encouraged).
- A 3D Visualization/Animation relating the design to real life applications. The visualization must be developed using Quanser's QUARC visualization utilities, which will be provided to student participants upon request.
- ***IMPORTANT NOTE: ALL MATERIALS REQUIRED FOR PROJECT HAVE TO BE FUNDED BY STUDENT TEAMS, THEIR UNIVERSITY, LOCAL INDUSTRY AND/OR LOCAL SPONSORING INSTITUTIONS. IFEEES, SPEED, ISTECC, AND QUANSER ARE NOT RESPONSIBLE FOR ANY COST ASSOCIATED WITH THE DESIGN, IMPLEMENTATION AND TEST OF THE PROJECT.***

Definition of sustainable engineering

- Part of the project is to research and define "sustainable engineering". This can include energy efficient systems, solar energy, wind, battery experiments, fuels, thermal systems, water management, etc.
- Design teams should research and survey current innovative practices among universities worldwide in their sustainable engineering activities, teachings, and adapt, refine, or provide even better alternatives.
- Design teams should clearly articulate the curriculum concept that is to be taught by the trainer and some evidence that this is used in Current Engineering programs.
- Design teams must select one or more applications within sustainable engineering and develop both the hardware and the curriculum exercises that will help engineering student learn about sustainable engineering. Curriculum exercises should provide enough material for about 8 hours of pre lab and in laboratory exercises.

Design constraints

- Must meet all of the technical constraints provided by Quanser.
- Cost of parts must not exceed \$250 USD and parts required must be verifiably available as "off-the-shelf" from an online source.

Curriculum requirements

- Develop a minimum of 3 distinct laboratory experiments that illustrate the engineering concept and provide sufficient background and operational information for students.
- Technical support materials such as Mathematical models, circuit diagrams, controller designs must be provided.
- Students are encouraged to explore various media including documents, videos, tutorials, web applications and services, simulations, etc.

IP Ownership

- By submitting to the competition the ownership of the design concept is transferred to Quanser Inc. Concepts that are chosen and developed by Quanser to become commercially available will be eligible for contract negotiations with Quanser. Royalties and acknowledgements are at Quanser's sole discretion. Contest participants will be required to agree to complete Terms and Conditions during the registration process.