SCIENCE Workshops – Gator Tracks!

on Bioenergy and Biosensors at Florida 4-H Congress July 26-28, 2011

Summary Description:

The ABE Department at the University of Florida will be conducting two workshops (tracks) of five half-day modules each within a span of three days during the 4-H Congress on the UF campus in summer 2011. Each module will consist of interactive science activities for a group of 20 youth and their trainers/supervisors. The modules will stand alone, so that different youth can attend any one module without having attended previous modules. One track will relate to renewable bioenergy technology, and the other track will relate to the important new field of biosensor technology, as described below:

Workshop Track #1 on Bioenergy:

Participating youth and trainers will be given the opportunity to learn how:

- Solar panels produce heat energy and photovoltaic cells produce electrical energy.
- Home energy efficiency can be improved by a variety of low/no-cost measures.
- Biomass residues recovered from bioenergy refinery waste streams can be processed into value-added products.
- Anaerobic digestion (composting) can convert organic waste and inedible plant material into biogas (natural gas), and how recycled vegetable oils can be processed into diesel fuel (biodiesel).
- Ethanol (fuel alcohol) can be made from the cellulose in woody fibers and inedible plant materials, and how sustainable energy systems can be integrated with an example of solar energy being used to produce biogas and biodiesel fuel.

Workshop Track #2 on Biosensors:

Participating youth and trainers will be given the opportunity to learn:

- Basic principles upon which biosensors work and the basics of electrical devices, including recognition and transduction.
- How biological molecules have evolved highly specific recognition mechanisms for interacting with molecules.
- How nanomaterials are used in biosensors for enhancing transduction of chemical signals into a measurable output (e.g., voltage).
- Fundamentals of signal processing, and how this can be incorporated with the design of biosensors for real time remote sensing applications.
- How to build and test their own biosensor.

Planned sequence schedule of workshop modules within each track:
The following figure lays out the scheduled plan for which workshop modules will be offered each morning and afternoon for each of the three days:

CONGRESS 3-Day Science Workshops July 26-28, 2011

Bioenergy Track

Time of Day	Tuesday July 26	Wednesday July 27	Thursday July 28
Morning (1/2 day)	Solar Energy	Group Community Service	Biogas and Biodiesel Fuels & Bioethanol and Sustainable Energy Systems
Afternoon (1/2 day)	Home Energy Efficiency	Biomass Residue Recovery	

Biosensors Track

Time of Day	Tuesday July 26	Wednesday July 27	Thursday July 28
Morning (1/2 day)	Fundamental Principles of Electronics	Group Community Service	Remote Sensing and Signal Processing & Build Your Own Biosensor
Afternoon (1/2 day)	Biological Recognition and Transduction	Physical Sciences (nano-materials)	

Lights, Camera, 4-H!
FL 4-H Congress

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