Pre-Engineering

This program will be designed to introduce pre-college students to various engineering and technology disciplines with emphasis on mathematics. This program will be offered by the Department of Advanced Technologies, Alcorn State University to encourage pre-college students to consider engineering, science, and technology as a career.

Project: Understanding the Concepts of Mathematics

Agenda:
- Day 1: Arithmetic, Algebra, and Geometry
- Day 2: Trigonometry, and Calculus
- Day 3: Probability, and Statistics

Project: Applications of Mathematics in the fields of Engineering – Mathematics in the Real World

Agenda:
- Day 1: Calculations, Online tools, Games, A puzzle, and Fun
- Day 2: Mathematics in the Real World
- Day 3: Problems Solving (i.e., selected fields of Engineering)

Overview of the Summer Camp

Location: Alcorn State University (Lorman, Vicksburg and Natchez Campus)
Duration of Camp: Two Weeks
Number of Students per camp: 30 Students
Cost per Student: $150.00

Programs participating in Summer Camp:
- Robotics and Manufacturing
- Computer Networking
- Spatial Information Systems
- Pre-Engineering

Faculty Members (Program Leaders):
- Dr. Cheng Cheng Li (Computer Networking)
- Dr. Ognjen Kuljaca (Robotics)
- Dr. Steve Adzanu (Pre-Engineering)
- Mr. Sam Adu-Prah (Spatial Info. Systems)

Supporting Faculty Members:
- Ms. Mamie Griffin
- Mr. Kweku Donkor
- Mr. Sreedhar Meehineni
- Mr. Pritpal Dang
- Mr. Malvin Williams Jr.
- Mr. Prashant D. Shinde

Supporting Staff Members:
- Ms. Denease White
- Ms. Amanda O’Quinn

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Mobile Robots:
Applications: Line Following, Obstacle Avoidance, etc.
Agenda:
1st Day: Building of robot (Mechanical & Electrical learning)
2nd Day: Computer Programming
3rd Day: Implementing applications (Performing Real Time Experiments)

Sensor Interface & Demonstration using LabVIEW & DAQ cards:
Agenda:
1st Day: Acquaintance with different type of sensors, digital programming skills
2nd Day: Learning LabVIEW and the related hardware
3rd Day: Interfacing LabVIEW with experimental testbed

PC buildup from scratch
Students will get a complete hands-on experience in assembling the entire PC system. During the lab, each student will have a chance to integrate motherboard, CPU’s, cooling systems, memory, video card, audio card, network cards, CD-ROM, keyboard, mouse, speaker, IDE and power cables using a screwdriver in assembly of a PC tower. This lab will expose students to learning how PC’s function. After the lab, students will gain sufficient expertise to solve problems and successfully configure a PC system. Duration: 6 hours, Equipment: 10 desktop computers

Operating system and software installation
Without software, a well configured PC just cannot function at all. In this lab, students will gain knowledge on how Microsoft Windows operating systems work. Students will also have hands-on experience on installing software applications such as Microsoft FrontPage and Adobe Photoshop for the subsequent website design training program. Duration: 4 hours Equipment: 10 desktop computers; Software

Computer network setup and configuration
In this program, students will learn the basic concepts of computer networking. During the lab, students will setup a small network by connecting computers to network devices through wired or wireless technologies. A multi-player network computer game will be installed by the students. Duration: 6 hours Equipment: 10 desktop computers; wireless switch; 10 wireless NICS; Computer gaming software

Website design
It is going to be great fun for each student to launch a website showcasing his or her unique personality. FrontPage, students are able to create their first websites in hours. After that, students will learn the advanced website enhancement techniques through using Photoshop and Macromedia Flash MX to create websites with pictures and even animations. Duration: 8 hours Equipment: 10 desktop computers; Microsoft FrontPage and Macromedia software

Spatial Information Systems
Program Objectives:
1) To learn about Geographic Information Systems (GIS) and Map making
2) To share geographic knowledge and understand Spatial Thinking

Day 1
A. Components of a GIS: Geography, Computer, Data, A thinking operator—that’s YOU!
B. How GIS works: Data is stored as a collection of thematic layers
C. Functions of a GIS: Geographic data is the fuel of GIS

Day 2
Let’s start with … Maps
There are many different kinds of maps...
Things about maps...
Maps
Maps are graphic representations of the real world
PROJECTS
What are the best routes for your school buses in order to get everyone home the fastest?

Day 3
PROJECTS
What is the fastest way to get to a fire?
Planning the best location for a new ball park
GPS data collection