

SUMMER PROGRAMS FOR HIGH SCHOOL STUDENTS

Biotechnology Summer Camp

Dates:	July 9 - August 3, 2012
Application Deadline:	April 2, 2012
Cost:	\$2400 residential or \$1600 non-residential
Financial aid:	Limited number of full-tuition scholarships are available to applicants who are eligible for the Federal free or reduced lunch program. Please submit a letter, on letterhead, from an official at the school district or the letter you received stating that you are eligible for the free or reduced lunch program.
Eligibility:	Students must have completed ninth grade and biology to apply

The goal of this program is to introduce motivated high school students to the techniques used in modern biotechnology research. The students begin by learning concepts and techniques as a class but quickly move to working in with a partner on a research project. There are lectures by university faculty, library research and model systems such as bacteria, yeast, *Euglena*, *C. elegans* and *Dictyostelium*, to help students choose and explore topic areas that interest them. Students use the information and techniques to develop and test a hypothesis using one of the model systems. Work is presented in a formal poster session at the end of the program. Students living on campus during the program will go home on the weekends.

Explorations in Forensics

Dates:	July 23 – July 27, 2012
Registration Deadline:	June 1, 2012
Cost:	\$400.00
Time:	9:00 AM - 3:00 PM
Eligibility:	Students must have completed 9th grade and not yet taken a formal Forensics course

Forensic Science is the application of science to matters of or pertaining to the law. This program includes a variety of scientific disciplines including Biology, Chemistry, Physics, Biochemistry, Earth Science, and other applied sciences. It will explore the various disciplines that fall under the umbrella of Forensic Science. It will complement the students' science curriculum in high school and challenge them to think, investigate, and solve problems. This workshop can serve to help students to decide if they are interested in taking forensics in high school. The focus of the first four days concentrates upon the development of skills and techniques that will be utilized to process a mock crime scene(s) as the culmination of a week full of hard work, learning, and fun.

Math Summer Camp

Dates:	July 23 - August 3, 2012
Application Deadline:	April 2, 2012
Cost:	\$1500 residential or \$800 non-residential
Financial aid:	Limited number of full-tuition scholarships are available to applicants who are eligible for the Federal free or reduced lunch program. Please submit a letter, on letterhead, from an official at the school district or the letter you received stating that you are eligible for the free or reduced lunch program.
Eligibility:	Students must be juniors or seniors in the Fall of 2012

The program is designed for students who will be entering their junior or senior year in high school and have an interest in enriching their mathematics education. During the two-week program students will explore several branches of mathematics, including:

- Geometry
- Number Theory
- Game Theory
- Cryptography
- Finance

In addition students will learn to use MAPLE, an invaluable tool for anyone who is interested in studying Mathematics, Physics, Engineering, or Economics at the college level or beyond.

Engineering Summer Camp

Dates:	July 23 – August 3, 2012
Application Deadline:	April 2, 2012
Cost:	\$1500 residential or \$800 non-residential
Financial aid:	Limited number of full-tuition scholarships are available to applicants who are eligible for the Federal free or reduced lunch program. Please submit a letter, on letterhead, from an official at the school district or the letter you received stating that you are eligible for the free or reduced lunch program.
Eligibility:	Students who will be juniors or seniors in the Fall of 2012. Students with a strong background in math and science are recommended.

The goal is to introduce motivated high school students to the various fields in engineering. Activities will include, but are not limited to:

- Measure the speed of sound, an important task for applications like sonar; and object localization which is the fundamental principle used in sophisticated applications like radar and GPS.
- Fabricate a fiber voice link using a kit with components and printed circuit boards. Learn about a modern fiber optic communication system and various subassemblies, including a transmitter and receiver and then assemble the boards and test the link.
- Build a metal detector using a kit. The assembled device can be used to detect metal pipes behind walls based on the principles of electromagnetic induction.
- Develop an embedded processing system for measuring temperature. Embedded processors are at the core of many modern applications, including mobile devices, multimedia, and robotics.

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- Build a temperature sensor system involving embedded micro-processor based systems and VHDL based digital systems.
- Perform a series of experiments in which students will grasp the concept of frequency in everyday signals, mainly in speech and music. The experiments will be performed in real time, on dedicated digital signal processing chips, using a visual programming environment. Audio clips and the students' own voices will be taken as inputs via microphones, and loudspeakers will be used as the main outputs. Preset oscilloscopes will be used to get a real-time visual concept of the outputs. The experiments will enable the students to create sound effects on their own.
- Demonstrate the use of sensors and digital control of robot functions.

For additional information or questions, please see our website: www.stonybrook.edu/cesame

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