



MSIT'13 Academy
Department of Mathematics
201 Donaghey Avenue
Conway, AR 72035

Dr. Ramesh Garimella, Chair
Department of Mathematics
University of Central Arkansas
201 Donaghey Avenue
Conway, AR 72035

Activities

The MSIT'13 Program will offer enriched activities for 9th, 10th, & 11th grade students in central Arkansas in mathematics and related fields of science. The MSIT'13 Program provides a setting that is conducive to active learning and the exchange of ideas related to theory and practice in the areas of Science, Technology, Engineering, and Mathematics. Our dynamic instructional environment integrates topics related to sciences and mathematics with hands-on activities. See the other side of this brochure for the activities and their descriptions. All sessions will be conducted by UCA professors.

General Information

While some refreshments will be provided, participants should bring their own lunch. Students will have computers available for computations. All activities will be conducted in the Mathematics and Computer Science building and Lewis Science Center of UCA. A map of the university will be included in the registration packet to show the drop-off and pick-up points for students. Applications will be processed in the order received. We encourage students to apply as soon as possible as there is a limitation on the space. Preference will be given to students in central Arkansas.

Contact Information

Complete information about the MSIT'13 Program (such as more detailed description, activities, and application materials) is available on our Website:
www.uca.edu/math/news/

For questions, contact:

Dr. Ramesh Garimella, Chair
Department of Mathematics
University of Central Arkansas
Conway, AR 72035
Phone: (501) 450-3147
Fax: (501) 450-5662
E-mail: rameshg@uca.edu

Program Information

Fee*: \$75 per participant

Dates: July 15–19, 2013

Time: 9:00 AM - 4:30 PM

Lunch time: 12:00-2:00 pm
Bring your own lunch

Lunch time activities include:

- Visit to UCA Planetarium
- Campus Tour
- Group Photo
- Information on Math & Science programs at UCA

Location:

**Math and Computer Science Building
Lewis Science Center
UCA Campus**

Eligibility:

Participant must be a 9th, 10th, or 11th grade student during 2012-13 school year.

Deadline for application:

June 14, 2013

***A limited number of fee waivers are available. For more information please call the number listed in the contact information.**

University of Central Arkansas

MSIT'13

**Mathematics, Science, &
Information Technology
Summer Academy
July 15-19, 2013**



**Presented by
Department of Mathematics
&
UCA STEM Institute**

MSIT'13: Mathematics, Science, & Information Technology Summer Academy

Registration Form

MSIT'13

Join the **MATHEMATICS, SCIENCE, & INFORMATION TECHNOLOGY SUMMER ACADEMY (MSIT)** for mathematically talented students in Summer 2013 (MSIT'13) at the University of Central Arkansas. This one-week program is designed for promising 9th, 10th, and 11th grade students in central Arkansas. The objective of the program is to stimulate and enhance interest in mathematics and its applications to the physical, biological, and computer sciences. Faculty from UCA's College of Natural Sciences and Mathematics will lead investigations that link their areas of specialty with realistic and scientific applications. Participants will conduct experiments, collect and analyze data, develop mathematical models utilizing computers, and use the results to make predictions and solve problems involving cryptology, building e-commerce websites, and graphic programming in Java Script.

Cryptology: Coding and decoding Secret Messages
Dr. R. Garimella & Dr. R.B. Lenin
 Department of Mathematics

Cryptography is the art of secret communication. It involves transforming a plain message into a jumbled text so that nobody other than the intended receiver will be able to decipher and comprehend the message. Due to rapid usage of modern communication technologies, security has become a serious concern in terms of tampering with vital messages that are being transmitted over the Internet or hand held devices. A great deal of modern cryptography depends upon



the basic number theory, clever manipulations of large integers, and use of software such as *Excel*. In this program, students will be introduced to essentials of number theory, and Excel for encryption. Students will gain hands-on experience in encrypting and decrypting messages.

Building E-Commerce Websites
Dr. Mark Smith
 Department of Computer Science

The students apply the most popular Web technologies such as HTML 5, Cascading Style Sheets (CSS), JavaScript, PHP along with web services provided by Amazon.com, Google, and PayPal services to build an e-commerce website. Data transactions will be maintained by a MySQL database system. Students will utilize Microsoft Visual Studio Professional to integrate images, audio, video, and animations to develop a multimedia website. The activity will be conducted in a hands-on computer laboratory setting.



Graphic Programming in Java Script
Dr. Clarence Burg
 Department of Mathematics

Computer graphics depends heavily on many mathematical concepts from geometry and algebra. Using the Java Script programming language, we will investigate how to build lines, polygons and circles, which are the basic



building blocks of computer graphs. We will start with an introduction to the basics of programming focusing on Java Script and will learn how to develop and implement step-by-step algorithms for drawing these basic shapes. Once we have implemented these basic building blocks, we will be able to create our own artistic designs by combining them in special ways. By the end of the week, students should be able to animate these objects so that they move around the screen. The students will be able to run and modify these codes for future uses.

MSIT '12 Pictures



Student Name _____

Parent/Guardian Name _____

Address _____

City _____

State _____ Zip _____

Home Phone# _____

E-mail _____

Grade in 2012-13 school year _____

School attended _____

Name of activity you would like to attend:

(check one box):

- Cryptology: Coding and Decoding**
- Building E-Commerce Websites**
- Graphic Programming in Java Script**

