Program Description

Algebra is one of the most difficult topics for students to learn. It is considered the gatekeeper for student’s pursuit of careers in science, technology, engineering, and mathematics (STEM). Working with K-12 educators, the UC Davis K-14 Outreach Center for Computing and STEM Education (C-STEM) has developed a new strategy to support Algebra instruction. This academy trains educators who teach Pre-Algebra and Algebra I in both classroom and afterschool programs to effectively use this new strategy. Through a sequence of well-designed simple, concise, and self-contained math lab sessions, basic concepts of Algebra will be reinforced through practical applications. Concurrently, students will learn the fundamentals of computing, underlying working principles of computers, and computer programming for problem solving. The C-STEM Center and the NSF CREST Program will support trainees through the program implementation process.

Outline of Topics

- Order of Arithmetic Operations
- Fundamental Properties of Numbers
- Variables and Their Applications in Computing
- Irrational Numbers
- Graphing and Solving Linear Equations
- Understanding Functions
- Evaluating and Plotting Polynomials
- Graphing and Solving Quadratics
- Plotting Inequalities and Systems of Inequalities
- Graphing and Solving Systems of Linear Equations
- Graphs of Rational Functions
- Radical and Exponential Functions

Outcome for Trainees’ Students

1. Through a set of interactive computing and applied problem solving activities in a C/C++ interpreter Ch, students will gain a better understanding of algebra concepts and their applications.
2. Students will learn the fundamentals of computing, underlying working principles of computers, and computer programming for problem solving.
3. Students will be able to participate in the UC Davis Robot Challenge Competition. See Link: http://c-stem.ucdavis.edu/activities/c-stem_day/

Registration

- Cost: $299/teacher (each teacher can bring the school principal and a paraeducator) before September 6, 2011; $349 after September 6, 2011.
- Registration covers instruction, supplementary textbooks, teaching materials, software licenses for teaching, morning beverage, lunch, UC Davis C-STEM Center support for implementation of the program. Laptops are necessary during the training.
- Optional $130 for 2.4 Continuing Education Unit quarter credits from UC Davis Extension. Credits request forms available on the first day of the class.

Contact: Kevin Gucwa
Phone: (530) 752-1028
Email: kgucwa@ucdavis.edu

The UC Davis K-14 Outreach Center for Computing and STEM Education (C-STEM)
• 24 Professional Development Credit hours upon training completion for teachers in Yolo County (Sacramento and other counties pending).

• Please register for the academy through the website [http://c-stem.ucdavis.edu/training/CREST/FallAcademy](http://c-stem.ucdavis.edu/training/CREST/FallAcademy) before the early registration deadline of September 6th to reserve your space.

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• Make check payable to “The Regents of the University of California”. Send check and this application form to Kevin Gucwa, Director Assistant, UC Davis C-STEM Center, UC Davis, One Shields Avenue, Davis, CA 95616; phone (530) 752-1028; Email: kgucwa@ucdavis.edu.

**Organizer:** the UC Davis K-14 Outreach Center for Computing and STEM Education (C-STEM).

**Sponsor:** Yolo County Offices of Education, Sacramento County Offices of Education, and California AfterSchool Network.

**Financial Supporter:** National Science Foundation under the Grant CNS-1132709.

**Instructors:** Harry H. Cheng and Kevin Gucwa (UCD C-STEM Center) and NSF CREST fellows (Washington USD: Francesca DeFazio 6th-8th, Gateway Community Charters, TRUSD: Heidi Espindola 9th-12th, Esparto USD: Spencer Krautkraemer 7th-8th, School of Engineering and Sciences, Sacramento City USD: Ryan Mangan).