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## 2011 Summer Academies in Math, Science and Technology

This summer, spend time at an Oklahoma college or university and discover the fascinating worlds of aeronautics, engineering, environmental conservation, forensic science and much more!

Summer Academies are FREE!

Be sure to request applications from the contact person listed under the academy you choose. Or call 1.800.858.1840 for more information.

*Note: Academies are either commuter or residential. For commuter academies, students will travel to and from the academy location each day. For residential academies, students will reside at the academy location on campus for the duration of the academy.*

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### Grades 8-9

Oral Roberts University

A Hands-On Program in Mathematics and Science

Residential

June 20-24

This academy provides opportunities for developing skills to learn mathematics and science. Mathematical activities include code-breaking cryptology and fractal pattern recognition. Science experiences include field trips, real-world technologies, rocketry and laboratory work where students seek to understand the natural world. The use of problem-solving ideas and project-based learning integrate these mathematics and science experiences.

Contact: Dr. John Matsson, [jmatsson@oru.edu](mailto:jmatsson@oru.edu), 918-495-6935, or get an application at <http://oru.edu/url/?u=bPee>

University of Oklahoma

Sky High: An Exploration of Aeronautics From the Basics and Beyond

Commuter

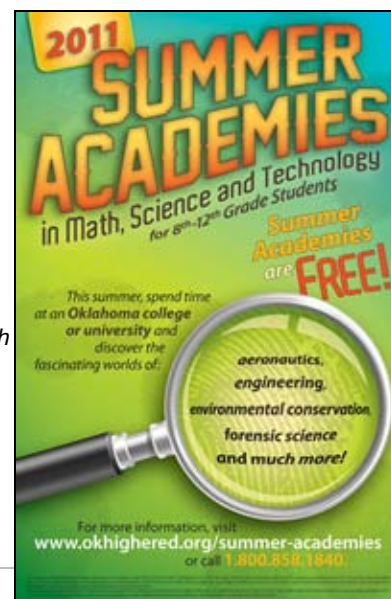
July 18-29

This academy offers a two-week commuter program focusing on aeronautics for 30 students entering eighth and ninth grades. Students will attend classes at Westheimer Field, the University of Oklahoma's official air field, and will have pilots as instructors and be able to fly in one of the university's Piper Warrior III aircraft. These aircraft are owned, operated and expertly maintained by the OU. The combination of classroom instruction, field experiences and flight time in university aircraft will offer students a "hands-on approach" in learning about aeronautics and careers in the aeronautical field. Students will gain first-hand knowledge and behind-the-scenes experiences that cannot be duplicated.

Contact: Holly Mills, [hollymills@ou.edu](mailto:hollymills@ou.edu), 405.325.6897, or visit [http://youth.ou.edu/summer\\_academies.html](http://youth.ou.edu/summer_academies.html)

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## Grades 8-10

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Cameron University  
 Science Detectives Summer Academy  
 Residential  
 June 1-7

This academy asks, "Are there a growing number of organisms developing resistance to antibiotics?" This academy will include experience in field biology, laboratory science and inquiry, as well as exploration of health care careers. It is also an opportunity to experience what it is like to study and live on a college campus. Through the course of the academy, students will be introduced to methods of sample collection, scientific laboratory methods, scientific inquiry and opportunities for high school students to pursue biomedical education through the Oklahoma Technology Centers, as well as explore and experience health care careers in a hospital setting.

Contact: Dr. Joe Langley, [jlanglej@cameron.edu](mailto:jlanglej@cameron.edu), 580.581.2852, or Lora Young, [loray@cameron.edu](mailto:loray@cameron.edu), 580.581.2284

**Northeastern State University**, Broken Arrow  
 Get Green for Blue: Outdoor Investigations to Connect Water to You  
 Commuter  
 June 6-10

Put on your waders, grab your net and let's catch those critters! In teams, you will learn about water quality through collecting data, analyzing the health of water bodies and determining possible solutions to water quality problems. The program is open to students entering the eighth, ninth or 10th grade. Come to Northeastern State University in Broken Arrow and the Rogers County Reserve and be a part of this fun, activity-based adventure!

Contact: Dr. Kathi McDowell, [mcdowelk@nsuok.edu](mailto:mcdowelk@nsuok.edu), 918.449.6502

**Northeastern State University**, Broken Arrow  
 Science at the Zoo  
 Commuter  
 June 20-24

Acting as scientists, students will utilize methodologies that integrate multidisciplinary techniques to move beyond memorizing facts about nature. Through observation and critical-thinking skills, they will formulate hypotheses about animals, their survival adaptations and their relationship to environmental issues. Digital video will record data to test their hypotheses. They will apply math and science knowledge and build leadership, team-building and deductive-reasoning skills. On the final day, students will present their research findings to their families.

Contact: Dr. Erik Terdal, [terdal@nsuok.edu](mailto:terdal@nsuok.edu)

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## Grades 8-11

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The University of Tulsa  
 Summer Engineering Academy at The University of Tulsa for Precollege Students  
 Commuter  
 June 20-24

This academy makes students aware of career opportunities in electrical and mechanical engineering through hands-on design projects, interaction with industry professionals and an integrating project. High school teachers will receive training and assist investigators with the academy's activities. Students will present their experiences in their math and science classes during the school year. Teachers will be supported in implementing academy exercises within their classrooms. The goal is to attract more Oklahoma students into engineering to help meet Oklahoma technical employer needs.

Contact: Peter LoPresti, [peter-lopresti@utulsa.edu](mailto:peter-lopresti@utulsa.edu), 918-631-3274

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## Grade 9

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University of Oklahoma Health Sciences Center, Oklahoma City  
Exploring Math and Science Academy (EMSA) at the University of Oklahoma Health Sciences Center (OUHSC)  
Commuter  
June 6-17

This academy is a stimulating summer experience for ninth-grade students to explore careers in the health sciences. The academy will provide hands-on laboratory and classroom activities for students that will enhance their math and science abilities and provide them with invaluable insights into health science careers. This commuter academy will begin at 8 a.m. and end at 5 p.m. daily.

Contact: Brian Corpening, [brian-corpening@ouhsc.edu](mailto:brian-corpening@ouhsc.edu), 405.271.8001, ext. 48688, or visit [www.ouhsc.edu/communitypartnership](http://www.ouhsc.edu/communitypartnership)

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## Grades 9-10

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Oklahoma State University, Stillwater  
Exploring Quantitative Analysis: A Basic Introduction  
Residential  
June 5-18

Students will learn basic concepts of research design and statistics, learn more about careers in math and science, and increase their mathematical and scientific reasoning abilities. Sessions consist mainly of students putting their knowledge into action through hands-on learning experiences, including observational research with people and animals, a survey design exercise and Web page design, during this two-week residential academy. The academy will also cover creativity, innovation and social entrepreneurship in an attempt to solve a major environmental issue of the day. Preliminary field trip plans include the University of Oklahoma Health Sciences Center, Frontier City, the Oklahoma History Museum, Science Museum Oklahoma and a Redhawks game.

Contact: Dr. Melanie Page, [melanie.page@okstate.edu](mailto:melanie.page@okstate.edu), 405.744.7334, or get an application at <http://fp.okstate.edu/melanis/ssa/>

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## Grades 9-11

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University of Central Oklahoma  
Exploring Chemistry  
Commuter  
Session I: June 6-10  
Session II: June 13-17

This academy introduces participants to concepts in chemistry and hands-on activities that reinforce these concepts. Students who have attended in previous years will be introduced to advanced methods of analysis. Academy topics will include student chemistry magic performances, water quality analysis, toxicology, food chemistry, organic compound synthesis and DNA analysis. Students will work in teams of five with a college mentor to collect, synthesize, analyze and then present their findings in a final PowerPoint presentation. Guest speakers will talk with the students about education and career opportunities in the field. Lunch is provided.

Contact: Dana Rundle, [drundle@uco.edu](mailto:drundle@uco.edu), or visit <http://www.chemistry.uco.edu/>

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## Grades 9-12

University of Oklahoma, Biological Station at Lake Texoma  
Field Studies in Multidisciplinary Biology  
Residential  
Session I: June 5-17  
Session II: June 19-July 1

This academy offers two, two-week sessions focusing on botany and zoology and using the “outdoors” as the classroom. Students will study organisms in their natural habitats and participate in discussions on research methodology. Students will gather insects and plant collections and write scientific papers based on their extensive field studies. The combination of field studies and laboratory sessions with a “hands-on approach” will assist the students in developing such skills as observation, measurement, classification, experimentation, interpretation, communication, modeling and safety. Students will gain firsthand knowledge and experiences that cannot be equaled in a school classroom setting. Sixty high school students will be accepted, 30 students for each session.

Contact: Holly Mills, [hollymills@ou.edu](mailto:hollymills@ou.edu), 405.325.6897, or visit [http://youth.ou.edu/summer\\_academies.html](http://youth.ou.edu/summer_academies.html)

Northeastern Oklahoma A&M College  
Valuing Tradition: Applying Indigenous Stewardship in Ecology  
Residential  
June 21-25

“Only when the last tree has died and the last river has been poisoned and the last fish has died will we realize that we cannot eat money.” (Cree Proverb) This engaging residential academy is an investigation into the scientific and cultural applications of ethnobotany as it pertains to medicinal remedies, the reclamation of damaged ecosystems and preservation of endangered plant species. Students will learn to identify some native plant varieties, actively participate in data collection and analysis, and conduct multiple laboratory studies designed to evaluate the impact of ethnobotany on phytoremediation and on its implications for medicinal remedies.

Contact: JulieAnna Rohde, [jrohde@neo.edu](mailto:jrohde@neo.edu), 918.540.6271, or visit [www.neo.edu/StudentLife/Activities/SummerCamps/tabid/1241/Default.aspx](http://www.neo.edu/StudentLife/Activities/SummerCamps/tabid/1241/Default.aspx)

Northern Oklahoma College, Enid  
CSI: Northern Summer Academy  
Residential  
July 11-14

This academy is looking for high school students interested in science, mathematics and/or career opportunities in criminal justice. Twenty-five students will be selected to participate in four exciting days of hands-on activities, research, science experiments, guest speakers, and field trips for behind-the-scene looks at the area of criminal justice and forensics. Applications are due by April 15.

Contact: Traci Schwerdtfeger, [traci.schwerdtfeger@north-ok.edu](mailto:traci.schwerdtfeger@north-ok.edu), 580.748.2191, or get an application at <http://www.north-ok.edu/>

Seminole State College  
Peek Into Engineering (PIE)  
Residential  
July 31-Aug. 5

During this academy, teams of students will assemble robots, model boats and design an obstacle course in the form of a maze. Participants will also be exposed to virtual, digitally controlled mass inflow systems. Exciting activities will expose participants to aerospace, computer, electrical, material, mechanical and systems engineering. Field trips will be taken to the University of Oklahoma, the Jasmine Moran Children’s Museum and engineering facilities like Enviro Systems and OG&E. Competition will be held throughout the academy.

Contact: 405.382.9217 or visit [www.sscok.edu/PieAcademy/PieMainPg.htm](http://www.sscok.edu/PieAcademy/PieMainPg.htm)

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## Grades 10-11

## East Central University

Coding Theory, Competitive Strategies, Risk Analysis and Other Mathematical Pursuits

Residential

June 6-10

The aim of this academy is to introduce participants to a hands-on, technology-based, fun-filled, stimulating interdisciplinary experience, exposing them to connections between math and related scientific areas, such as cryptography and operations research, probability and statistics, that are used extensively in the real world. The attempt is to generate an interest and improve mathematics performance at the high school level, thereby encouraging, exciting and motivating a pursuit of mathematics and its applications as a major area of study at the college level and beyond and/or as available and lucrative career options.

Contact: Andrew Wells, [awells@ecok.edu](mailto:awells@ecok.edu), 580.559.5620, or visit

<http://cs.ecok.edu/~rferd/sumacad/home.htm>

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### Grades 10-12

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## Langston University, Langston

An Intensive Academy in Math, Science, and Technology for Grades 10-12

Residential

June 5-18

This academy will host 36 rising 10th-, 11th- and 12th-grade students from around Oklahoma. The academy's focus is improving students' appreciation for and enrollment in Oklahoma core curricula through intense, positive experiences in mathematics, chemistry, biology, technology, and preparation for success. Oklahoma core curricula, ACT preparation, scholarships and undergraduate matriculation are addressed. Experiences incorporate cutting-edge technologies that support hands-on activities, innovative teaching and learning.

Contact: Dr. Alonzo F. Peterson, [afpeterson@lunet.edu](mailto:afpeterson@lunet.edu), 405.466.3341, or visit

[www.langston.edu/academics/summer\\_programs.aspx](http://www.langston.edu/academics/summer_programs.aspx)

## Cameron University

NanoExplorers: A High School Summer Science Academy

Residential

June 12-24

The Department of Physical Sciences at Cameron University will host this 10-day academy where students will live on campus for the two-week period. The academy will feature participation by 24 highly motivated and talented high school students who have completed their freshmen, sophomore or junior years in high school and are Oklahoma residents. The academy will introduce students to those concepts necessary to understand why very small systems exhibit unique behavior. Students will engage in hands-on activities designed to introduce the concepts of nanotechnology and related careers in both chemistry and physics. Some of the activities in the academy include construction of a solar cell, construction of a super conductor train, determination of the crystal structure of a chemical compound, construction of a conductivity device and amusement park physics, which will include a trip to Frontier City in Oklahoma City.

Contact: Dr. E. Ann Nalley, [annn@cameron.edu](mailto:annn@cameron.edu), 580.581.2889, or Dr. Ramiro Moro, [rmoro@cameron.edu](mailto:rmoro@cameron.edu),

580.581.2309, or visit <http://nanoexplorers.50webs.com>

## Oklahoma State University, Stillwater

Camp T.U.R.F. (Tomorrow's Undergraduates Realizing the Future)

Residential

June 12-24

At this two-week, residential academy for upcoming high school sophomores, juniors, and seniors, students will interact with college professors as well as professionals in the field, exploring a variety of careers in horticulture, landscape contracting and landscape architecture. Interactive, hands-on explorations will occur outdoors at botanical gardens and field research stations, with indoor activities in design studios and greenhouses. Sessions about college admission, financial aid and study skills will be interspersed throughout the academy. Evening and recreational activities are also planned.

Contact: Shelley Mitchell, [Shelley.mitchell@okstate.edu](mailto:Shelley.mitchell@okstate.edu), 405.744.5755, or visit [www.hortla.okstate.edu](http://www.hortla.okstate.edu)

Tulsa Community College  
Math and Science in Health (MASH)  
Commuter  
Session I: June 13-17  
Session II: June 20-24

The Northeast Area Health Education Center (AHEC) at Tulsa Community College will host two MASH Camps with 24 students each. These weeklong day camps will provide students with hands-on activities in math and science, including utilizing TCC's biotechnology lab, to showcase a variety of health care careers. Students will also receive a college tour, scholarship and financial aid information, presentations from health care professionals and more. The program seeks to provide students with the tools to take full advantage of their high school educations, make informed decisions about college, and begin conceptualizing an eventual career by providing information about health care careers.

Contact: Allison Seigars, [aseigars@tulsacc.edu](mailto:aseigars@tulsacc.edu), 918.595.8403

Oklahoma State University, Stillwater  
Fired-Up About Research Science and Engineering  
Residential  
July 17-22

Explore and experience the excitement of the technology and sciences that reshape our world. During an intensive weeklong residential program participants are challenged with laboratory and field-based scenarios centered on a common theme: fire. Participants investigate careers, learn new skill, and prepare for the fascinating world of technology. Specific activities include biosystems, robotics, and the science and engineering of fire.

Contact: Jovette Dew, [Jovette.dew@okstate.edu](mailto:Jovette.dew@okstate.edu), 405.744.2920, or visit [www.diversity.okstate.edu](http://www.diversity.okstate.edu)

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University of Oklahoma, Norman  
Going Green: Partnering Five Architecture Disciplines  
Residential  
June 26-July 1

This academy offers high school juniors and seniors a one-week opportunity to study the process for "designing and building green" within the five built environment programs in the University of Oklahoma's College of Architecture. By incorporating all five disciplines – architecture, interior design, construction science, landscape architecture, and regional and city planning – the academy introduces students to interdisciplinary study focused in areas not typically available in high schools. Students will have class activities and field trips throughout each day, and evening educational activities are also scheduled.

Contact: Holly Mills, [hollymills@ou.edu](mailto:hollymills@ou.edu), 405.325.6897, or visit <http://youth.ou.edu>

Oklahoma State University, Stillwater  
Smart Cars Summer Academy  
Residential  
July 10-15

One of the fastest growing technologies is use of high-tech sensors. "Smart sensors" are being used in hundreds of application areas, like environmental monitoring, homeland security, medicine, aerospace and automobiles. During this weeklong residential academy, students will use smart sensor concepts to stimulate interest in science, math and technology. The students will develop a smart sensor system for steering an autonomous race car.

Contact: Jovette Dew, [Jovette.dew@okstate.edu](mailto:Jovette.dew@okstate.edu), 405.744.2920, visit [www.diversity.okstate.edu](http://www.diversity.okstate.edu)

Southwestern Oklahoma State University, Weatherford  
SSMA: Summer Science and Mathematics Academy at SWOSU  
Residential

July 11-22

This academy is designed to give 32 high school juniors and seniors a two-week experience in science, mathematics and technology. This program is designed to motivate students towards pursuing higher education and careers in STEM disciplines. The academy will be located on the SWOSU campus with participants living in dormitories, eating in cafeterias and taking classes in a variety of science content areas. Laboratory and field experiences will enhance the participants' problem-solving skills. During the last two days, participants will be involved in a problem-solving competition.

Contact: Dr. Brian D. Campbell, [brian.campbell@swosu.edu](mailto:brian.campbell@swosu.edu), 580.774.3118, or visit [www.swosu.edu/academics/chemistry/academy.asp](http://www.swosu.edu/academics/chemistry/academy.asp)

University of Oklahoma, Norman  
Bridges to College Math, Science and Engineering  
Residential  
Session I: July 17-22  
Session II: July 24-29

This academy offers two, weeklong sessions providing students entering their junior or senior years with experience in the areas of mathematics that reinforce the college study of physics, engineering and mathematics. Areas covered include probability, logic, statistics and calculus. The sessions will emphasize the use of extensive symbolic notation required to represent mathematical ideas. Students move from concrete examples to more abstract ones using hands-on methods. Students will compare and contrast the use of technology for undergraduate's physics, math and science students. The experience gives students unique exposure to a college atmosphere. Twenty-five students will be accepted for each session.

Contact: Holly Mills, [hollymills@ou.edu](mailto:hollymills@ou.edu), 405.325.6897, or visit <http://youth.ou.edu>

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