

# APPLICATION

Deadline: Postmarked by Friday, May 4, 2012

Please Complete All Four Pages



# summer bridge20 PROGRAM12

July 8 – 13

## RU COLLEGE OF SCIENCE AND TECHNOLOGY RADFORD UNIVERSITY

### PERSONAL INFORMATION (please type or print clearly)

Name \_\_\_\_\_  
(Last) (First) (Middle)

Home Address \_\_\_\_\_

Street \_\_\_\_\_ Apt# \_\_\_\_\_

Mailing Address (if different) \_\_\_\_\_

County of Residence \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Home Phone Number \_\_\_\_\_ Cell \_\_\_\_\_ Email \_\_\_\_\_

Age \_\_\_\_\_ Have you previously attended the Summer Bridge Program? \_\_\_\_\_ If so when? \_\_\_\_\_

T-shirt size \_\_\_\_\_ Small \_\_\_\_\_ Medium \_\_\_\_\_ Large \_\_\_\_\_ Extra Large

### PARENT OR GUARDIAN INFORMATION

#### Mother/Guardian

Name \_\_\_\_\_ Phone \_\_\_\_\_

Cell \_\_\_\_\_ Email \_\_\_\_\_

#### Father/Guardian

Name \_\_\_\_\_ Phone \_\_\_\_\_

Cell \_\_\_\_\_ Email \_\_\_\_\_

Model Release Agreement (for use of image outside of Radford University)

I hereby agree that the images taken of my child may be used by Radford University for promotion of Radford University and programs within the University. I further understand that the University shall own all rights to these images. These rights shall include economic and property rights as well as the right to copyright these materials.

\_\_\_\_\_  
Parent/Guardian Signature

\_\_\_\_\_  
Date

#### For Office Use Only

Registration Received \_\_\_\_\_ Letter of Reference \_\_\_\_\_ Student Essay \_\_\_\_\_

Group Selected \_\_\_\_\_ Acceptance Letter Mailed \_\_\_\_\_

# APPLICATION

summer bridge 20  
PROGRAM 12

July 8 – 13

## HIGH SCHOOL INFORMATION

School Name \_\_\_\_\_ Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Grade Level      Rising SO \_\_\_\_\_      Rising JR \_\_\_\_\_      Rising SR \_\_\_\_\_      Current High School GPA \_\_\_\_\_  
Graduation Date \_\_\_\_\_ Intended Major in College \_\_\_\_\_

## FEES

Scholarships to Summer Bridge are awarded competitively and cover the full cost of the program. Scholarship recipients will be sent letters of acceptance by May 18, 2012. Students who do not receive scholarships and want to participate in Summer Bridge may have the option of paying the cost of tuition, room and board (\$400) to attend.

Scholarships are made possible through funding from Dominion Resources, Novozymes Biologicals, Project Discovery of Virginia, Areva, Lynchburg Community Trust, Pentair Foundation—Aspen Technologies, RU alumna Ms. Dale Lee, Dr. Jane Y. Lewis and Dr. John R. "Jack" Nelson.

## ACCOMODATIONS

Participants are expected to share a room in on-campus housing (double occupancy). Roommates will be assigned.

Do you have any dietary restrictions? \_\_\_\_\_ If yes, please specify \_\_\_\_\_

## TRANSPORTATION

Participants or participants' parents/guardians are responsible for transportation to RU's campus on Sunday, July 8, 2012, and back home on Friday, July 13, 2012.

## LETTER OF RECOMMENDATION

Please attach a letter of recommendation by a counselor, teacher or adult leader in an organization in which you participate. The letter should include the recommender's name, phone number and email address.

## STUDENT ESSAY

Please write a 200-word essay describing your interest in science, mathematics or technology and why you would like to attend Summer Bridge. The essay should be typed, double spaced and attached to the application materials. This is an important component to the application and scholarship selection process.

## ENROLLMENT INFORMATION FOR CLASS GROUPS

Please review the group descriptions below and on the following pages of the application and choose your group placement. Each group consists of two coordinating class sessions. Placement will be based on student preference and group availability.

**Write a 1 beside your first choice and a 2 beside your second choice.**

\_\_\_\_ Group A      \_\_\_\_ Group B      \_\_\_\_ Group C      \_\_\_\_ Group D

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### **Group A—Mission to Mars: Survival and Exploration**

#### *Session 1—Create a Martian Rover to Explore the Planet*

Build and program a Lego Mindstorm robot to create your own Martian rover. With these rovers you will learn how to navigate, using sensors, path planning and kinematics, and a little about how motors work. You will be able to rewrite formulas to solve for unknown variables, use circles and central angles to determine arc length and calculate rotations using sines and cosines of an angle. These concepts help you to program and move your robot and explore the Martian landscape.

#### *Session 2—The Ultimate Test*

You will test your rover's capabilities in an out-of-this-world maze and at a number of science outposts on the Red Planet. Each of these outposts will have challenges for you to overcome using pure science explorations and projects necessary for human survival on Mars. Do Martians exist and could humans make Mars a colony of Earth? Find out!

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### **Group B—Environmental Science and the Southern Appalachians**

#### *Session 1—Creating and Shaping Mountains*

Basic principles of biology, chemistry, physics and geology play important roles in both creating and shaping mountains and valleys. These principles are especially evident in the southern Appalachian Mountains surrounding Giles County, Va. You'll learn about the formation of the basic sedimentary rocks (sandstone, shale, and limestone) that make up the valleys and ridges of the southern Appalachians and about the modifying forces of plate tectonics, weathering and erosion. During this session, you will also participate in "hands-on" experiments and activities, including a field trip to Giles County to observe and identify the rock types, geologic structures and weathering characteristics learned in class.

#### *Session 2—Google Earth and Giles County*

In this course, you'll learn how to visualize and recognize landscapes using Google Earth and topographic and geologic maps; work with map scales and determine distances; "read" topographic contours; and navigate using a topographic map. You will also receive a basic introduction to the use and application of GPS (global positioning systems). Then we'll put our mapping skills to work in the field by visiting the Mountain Lake area of Giles County. There, you will complete an outdoor exercise in which you locate, recognize and interpret geomorphological features, such as stream valleys and mountain ridges.

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### **Group C—Forensic Science—Bones and Bytes**

#### *Session 1—Forensic Anthropology, Forensic Archaeology and Forensic Science*

As an introduction to the world of Forensic Science, this course will discuss and demonstrate the use of archaeological survey and excavation methods in the investigation of crime scenes. Included will be field training in proper techniques for identification, mapping, and excavation of covert burials as well as surface remains. This training will involve you in excavating a mock crime scene to collect and record evidence from human remains and other associated artifacts. In the laboratory, you will learn the basics of forensic anthropology and the analysis of human skeletal remains. This will include the differentiation of human versus nonhuman bone as well as the major techniques for assessing the age at death, sex, ancestry and stature of unidentified human remains. You will also be introduced to the methods for investigating the manner of death.

#### *Session 2—Digital Forensics and Cybersecurity*

How do computer networks and systems help catch criminals? In this course, you will study the underlying concepts used in digital forensics to track illegal activity on networked systems to catch cybercriminals. You will also learn about the prevalence and sophistication of threats against networked computing infrastructures and their users and how to protect yourself from such attacks.

**Group D—The Novozymes Environmental Microbiology and Physiology Track**

*Session 1—Microbes and Man*

In this course, you will conduct experiments to demonstrate how bacteria can be bioengineered to make products that humans both need and use. You will also examine products, normally made by bacteria, upon which humans have come to rely, as well as the work that goes into discovering new bacterial processes and products that can be utilized to benefit the environment and humankind.

*Session 2—Hormones in the Wild*

How do animals adapt to cope with a changing world? One way is by making changes to their hormones—if times are tough they increase stress hormones; if things are good they invest more in reproductive hormones. You will learn all about hormones—what they are, how they work and how they shift with a changing environment. You will also have the chance to get hands-on experience with both field and laboratory research. Work will start in the classroom, getting some basic background on hormones and environmental change. Then you will have a chance to observe and handle the captive birds at the RU Aviary at Selu, where we'll discuss what a day in the life of a bird is really like. Then we'll take what we've learned out into the field, where we'll use different techniques to catch a sample of local songbird species. You will take blood samples and check the general health of all the birds that we catch. We'll take these blood samples back to the lab, where you'll learn laboratory techniques to measure stress and reproductive hormones. By the end of the week, we'll have enough data to compare health and hormones between different species, sexes and locations, and that should give us some insight into how animals (including you!) are able to change their physiology to deal with changes in their environment.

**AGREEMENT TO TERMS**

I understand that I am applying for a scholarship to attend RU's Summer Bridge 2012 Program from 7/8/12 through 7/13/12.

\_\_\_\_\_  
Student Signature

\_\_\_\_\_  
Date

I understand that my child is applying for a scholarship to attend RU's Summer Bridge 2012 Program from 7/8/12 through 7/13/12.

\_\_\_\_\_  
Parent/Guardian Signature

\_\_\_\_\_  
Date

Radford University does not discriminate against employees, students or applicants on the basis of race, color, sex, sexual orientation, disability, age, veteran status, national origin, religion, or political affiliation. Anyone having questions concerning discrimination or accessibility should contact the Social Equity Officer at (540) 831-5421 or (540) 831-5128 TYY.

Send Completed Applications and Materials to:

Ann Brown, Director  
Summer Bridge 2012  
PO Box 6936  
Radford University  
Radford, VA 24142

Questions: Contact Ann Brown  
Abrown238@radford.edu, (540) 831-6277

(Application Deadline is May 4, 2012)