

APPLICATION

Deadline: Postmarked by Monday, May 3, 2010

Please Complete All Four Pages



summer bridge20 PROGRAM10

July 11 – 16

RU COLLEGE OF SCIENCE AND TECHNOLOGY RADFORD UNIVERSITY

PERSONAL INFORMATION:

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: _____



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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:

There are no fees for Summer Bridge 2010 scholarship recipients. Scholarship recipients will be sent letters of acceptance by May 25, 2010. Students who do not receive scholarships and want to attend Summer Bridge 2010 may have the option of paying \$400, the cost of tuition, room and board, to attend. See Summer Bridge 2010 brochure or www.radford.edu/~bridge for more information.

ACCOMODATIONS:

Participants are expected to share a room in on-campus housing (double occupancy). Preferred roommates are not guaranteed.

Preferred roommate: _____ or no preference _____

Do you have any special meal needs? _____ If yes, please specify: _____

TRANSPORTATION:

Participants or participants' parents/guardians are responsible for transportation to RU's campus on Sunday, July 11, 2010 between 2 and 4 p.m. and back home on Friday, July 16, 2010 between 9 and 10 a.m.

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 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 Program 2010. The essay should be typed, double spaced and attached to the application materials.

ENROLLMENT INFORMATION FOR CLASS GROUPS:

Please review the group descriptions below and on the following pages of this application. Then indicate your first and second choice of group placement. Placement will be based on student preference, student essay and group availability.

Write a 1 beside your first choice and a 2 beside your second choice:

Circle your first choice: _____ Group A _____ Group B _____ Group C

Group A—Codebreaking and Cybersecurity

Session 1—Codebreaking and Puzzles

Do you enjoy looking for clues and patterns to solve puzzles? Welcome to the world of code breaking. Learn how to encrypt messages and crack codes. Students will explore and design different types of ciphers to encode messages and see how to use frequency analysis to crack each others' codes. They will also learn about the history of code breaking, including private and public-key encryption. Hands-on activities and technology will be utilized for encryption methods including the RSA algorithm.

Session 2 – Cybersecurity

Now that you have learned about code breaking, you will see how to put it into practice. Students will first learn about the various technological threats and vulnerabilities on computing infrastructure with hands-on experience with different types of cyber-attacks in a secure environment cut off from any real network. Students will then apply various countermeasures to defend against cyber-threats. This will include setting up a secure web-server, securing information stored on database servers, techniques to maintain privacy against inference attacks, and finally securing the information in transit across a network.

Group B—Environmental Sciences-Our Rivers

Session 1 – Introduction to Maps and Global Positioning Systems

According to the US Army, few factors contribute as much to the survivability of troops and equipment and to the successful accomplishment of a mission as always knowing where you are. In this course, students will learn how to visualize and recognize landscapes using topographic maps, determine distances with map scales and use a technologically advanced GPS system. They will then take their knowledge in the field to locate, recognize and interpret features such as stream valleys and sinkholes. On the final day, they will conduct a watershed analysis using topographic maps, GPS and GoogleEarth.

Session 2 – River Science

This course will provide an introduction to several aspects of river science including biological integrity, rivers as physical systems, moving water and sediment, and water quality. Students will be introduced to simple methods of assessing stream systems, habitats, biological communities and several parameters of water quality through a combination of classroom work and field research. Field research will involve surveying several transects of a local stream, calculation of discharge and several aspects of stream geometry at those transects, invertebrate surveys and water quality sampling at one of the transect sites, geospatial analysis of watershed characteristics in the geospatial lab, and stream habitat assessment.

Group C – Introduction to Forensic Science

Session 1 – Introduction to Forensic Archaeology and Anthropology

Students will learn the methods and techniques of forensic investigation, from field to the laboratory. Beginning with the field (Forensic Archaeology) component, the course will discuss and demonstrate the use of archaeological survey and excavation methods in the investigation of crime scenes. Included will be training in proper techniques for identification, mapping, and excavation of covert burials. The second part of the track focuses on the laboratory phase of forensic investigation and will familiarize students with the basics of Forensic Anthropology and analysis of human skeletal remains. This will include the differentiation of human versus non-human bone as well as the major techniques for assessing the biological profile of unidentified human remains including age-at-death, sex, ancestry, and stature, and methods for differentiating antemortem, perimortem, and postmortem (taphonomic) trauma and events.

Session 2 – Introduction to Forensic Biotechnology

Students will be introduced to the knowledge and skills' base from biotechnology that can be applied to forensic investigative work and crime scene analysis. They will then be engaged in laboratory modules that allow them "to apply" these biotechnology skills. The first laboratory experience will be an exercise in kinship fingerprinting using PCR-based human DNA typing. This technique is based on VNTRs (variable number of tandem repeat) regions of DNA. Students will be using their own DNA that they isolate from cheek cells and their hair. This will be followed with an exercise in examining maternally-inherited mitochondrial DNA with the use of their own DNA. In the final laboratory exercise students will learn molecular techniques involved in RFLP (Restriction Fragment Length Polymorphism) "fingerprinting" and compare banding patterns of crime scene DNA with "suspects" in order to determine the "culprit".

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AGREEMENT TO TERMS:

I understand that I am applying for a scholarship to attend RU's Summer Bridge 2009 Program from 7/11/10 through 7/16/10.

Student Signature

Date

I understand that my child is applying for a scholarship to attend RU's Summer Bridge 2009 Program from 7/11/10 through 7/16/10.

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.

