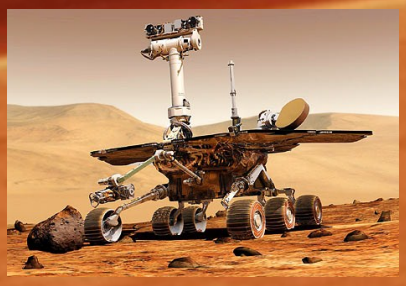
THE COLLABORATORY FOR CONCEPTUAL DESIGN & ENGINEERING



MISSION:

DESIGN AN AUTONOMOUS VEHICLE FOR AN EXTREME ENVIRONMENT

NASA

1870

STEVENS
INSTITUTE of TECHNOLOGY
THE INNOVATION UNIVERSITY

AIR FORCE RESEARCH LABORATORY

A ONCE-IN-A-LIFETIME OPPORTUNITY

TO LEARN ENGINEERING BASICS WITH RENOWNED ENGINEER AND NASA ASTRONAUT, DR. CHARLES CAMARDA, IN A SUMMER PROGRAM AT STEVENS INSTITUTE OF TECHNOLOGY

THE PROGRAM: NASA Astronaut and Senior Advisor for Innovation, Dr. Charles Camarda has teamed with faculty and experts from around the country to teach the art and science of engineering to high-school students. Our mission, iQ4 and NASA , is to connect students with an innovative approach to learning while solving real world problems.

THE PROJECT: *TO DESIGN AN AUTONOMOUS VEHICLE* for planetary terrain exploration (such as in Mars or Moon) as well as for terrestrial applications on earth can involve task specific small robots, terrain vehicles as well (relatively) large aerial vehicles. Dr. Camarda, along with Dr. Siva Thangam and distinguished members of the Stevens Institute faculty, along with industry, government and academic leaders from across America will work with the participants on site and in the virtual Collaboratory environment specifically designed to allow students to work on NASA Challenges and help solve real world problems.

Designing an autonomous aerial or terrain vehicle requires a multidisciplinary team that evaluates a complex set of subsystems that require an understanding of multiple engineering disciplines. These include: heat transfer, materials science, chemistry, structures, robotics, communications and sensors. Students will be introduced to basic engineering principles and Dr. Camarda's innovative approach to conceptual design and engineering. They will use simple analytical and numerical modeling methods to better understand how changes in parameters affect vehicle performance while having fun and using the creative side of their brains to explore and discover. Students will work in teams to tackle the various elements in the conceptual design and engineering process.

THE CURRICULUM: This program is offered to instill advanced critical thinking, problem solving, risk taking, and teamwork skills in students who have an interest in science and engineering and for those with artistic talents who may want to experience science and engineering concepts. The primary focus of the course will be conceptual design – an aspect of engineering that leads to innovative solutions to complex, multi-disciplinary problems. Working with the fundamental understanding that there is no substitute for the human mind – technology and models can aid in the design process but can never replace what motivated and prepared teams can achieve. Students will learn to function at a high level of learning while enjoying the process in a psychologically safe environment.

LOCATION:
Stevens Institute of Technology
Castle Point on Hudson
Hoboken, NJ 07030-5991

WHEN:
Session I: **July 18th—July 29th** or
Session II: **August 1st—August 12th**

DESCRIPTION:
On Campus 2 Week Course Emersion Plus Additional Two/Three Week Virtual Collaboration, Design and.. Final on Campus Presentation.

COST:
$1,000.00 per session

FOR MORE INFORMATION:
Phone: 201.iQ4.5911/(201) 474-5911

EMail: kevin@iq4.com
EFax: 212.313.9499

STEVENS
INSTITUTE of TECHNOLOGY
THE INNOVATION UNIVERSITY

The Collaboratory for Conceptual Design & Engineering

Student Application

First Name:_____ Last Name: _____

Address: _____

City: _____ State: _____ Zip: _____ Phone: _____

School:

_____

Address:_____

City: _____ State: _____ Zip: _____ Phone: _____

Class Year of Graduation: _____ Gender: _____

Ethnicity: Hispanic African American Asian Caucasian

Section I Check all STEM based courses you have taken up to this point in your HS career.

Science: ___ Biology ___ Earth Science/Geology

___ Chemistry ___ Physics

___ Forensics ___ Environmental Science

Technology ___ CAD Proficiency ___ Microsoft Office Skills

Engineering: ___ _____ ___ _____

___ _____ ___ _____

Mathematics: ___ Algebra ___ Geometry

___ Calculus ___ Statistics

___ Trigonometry

___ Number of AP STEM Credits to date _____ GPA

Primary Language: _____ Secondary Language: _____

HS Team Sports Played: _____ ___ _____ _____

Artistic Skills: _____ _____ _____

Musical Instruments Played: _____ _____ _____

What are your Hobbies?

_____

_____

_____

Section II

When it comes to the creative process, there are many roles we assume. Please rank each of the following five role descriptions in the order that best represents the way you work in a creative team. Rank all five words on a scale of 1 – 5. Put a 1 in the box most like you and a 5 in the box least like you.

___ Creative Develops multiple ideas quickly – Very creative

___ Collaborator Moves the process along by bringing in other people

___ Clarifier Asks questions about the idea to make it better

___ Champion Convinces others about the validity of the idea

___ Coordinator Understands the process and makes sure everyone is involved

Section III

Everyone understands things differently. Intelligence exhibits itself in many ways and we all acquire knowledge through a variety of methods. In order to help us build effective teams, please select the top three phrases below that best describe the way you acquire information. Rank your top three, 1, 2 and 3.

___ Linguistic Learner – Hearing, Listening and talking about a concept -

___ Logical /Mathematical – Seeing a logical pathway or being able to interpret a concept through numbers helps me to learn.

___ Musical Intelligence – I have skills in performance, composition and appreciation of musical patterns

___ Bodily Kinesthetic – Using your physical body as part of the problem solving process

___ Spatial – recognizes and uses the patterns of space in the learning process – perspective

___ Interpersonal Intelligence – Works very well in groups – Facilitator

___ Intrapersonal Intelligence – I understand myself and my skills very well – Independent

___ Naturalistic Intelligence – Learns well through the lessons of nature

___ Existential Intelligence – Uses Spiritual and Religious understandings as a learning strategy

Section IV

In thirty words or less, please let us know why you would like to attend the Collaboratory.

_____

_____

_____

_____

Thank you for completing the survey. Please Scan, EFax or Mail to:

Siva Thangam – Dean of Academic Administration
Kevin P. Romano, iQ4
403 Edwin A. Stevens Hall
Hoboken, NJ 07030-5991
Questions: 201.iQ4.5911/201.464.5911
Email: kevin@iQ4.com
EFax: 212.313.9499