Frostburg State University

Maryland Summer Centers

for Gifted and Talented Students

Sponsored by the Maryland State Department of Education

Summer Center for Future Engineers: Robot Design

Student and Parent Handbook

Session 1

July 8 – 13, 2007

Summary

The "Summer Center for Future Engineers: Robot Design" is developed to provide gifted and talented high school students with an opportunity to learn fundamentals of robots through hands-on design activities in Frostburg State University. Students will be grouped according to their entering grades and the experience they have acquired in similar programs. Each group will stay 5-days on FSU campus to design, develop, and build intelligent robotic systems based on prescribed requirements derived from real-world applications. Students will present their design work to a public audience at the end of the program. Physics experiments, instructional evening activities, planetarium shows, and various campus activities will complement the program.

Description

Robotics has been one of the most fascinating areas for students who are interested in science or engineering. From science fiction movies to real life applications, robots present examples of intelligent machines that stimulate children's imagination.

Frostburg State University (FSU) started a residential summer program in robotics for gifted and talented high school students in 2004. The "Summer Center for Future Engineers: Robot Design," funded by the Maryland State Department of Education (MSDE), is offered every summer in two one-week long sessions with a total enrollment of 40.

The goal of the program is to enhance students' knowledge of physics concepts to solve real life problems by using robotics applications. Throughout the program, students design and build robotic systems and present their prototype to an audience of their peers, parents, and local experts,

Computer Use

Computers in rooms 125 and 223 are available for students of the Summer Center for Future engineers with the username "labuser" and password "Summer06" (case sensitive). The purpose of providing this service is to promote excellence and to further the educational goals and objectives of the Summer Center for Future Engineers. A wide variety of instructional resources are available to students through the local network and Internet.

Students may access their e-mails during the time slots indicated by the instructors. The use of FSU computers is a "privilege" not a "right." Students should use the computers in a responsible manner and refrain from accessing any material that is not appropriate to the purpose of this program. Faculty and staff will continuously monitor the use of computers during instructional time and they will instruct students in the appropriate use of computer communication tools.

Code of Conduct

Students of the Summer Center for Future Engineers will display an exemplary behavior. Offensive language, inappropriate behavior, discrimination, or aggressive interaction with other students of the center and other students on campus is not acceptable.

Dress Code

Students may dress casually during the program. Flip-flops and loose clothes or accessories are not allowed due to safety reasons. The shirts should not display any discriminative or offensive message. Students are required to wear the Summer Center for Future Engineers badges throughout the program.

Use of Medication

The use of medication will be administered by the Registered Nurse. Inhalers or medical tools may be carried by the student with the permission of the doctor and registered nurse. Students are not allowed to take any medication without the knowledge of the nurse. In the case of any sort of medical concern or emergency, the Center Director must be notified. The phone numbers are listed on the "Crisis Plan."

Use of Cell Phones, pagers, stereos, games, and televisions

Use of cell phones, pagers, stereos, games, and televisions is not allowed during any instructional part of the program. Students may use these items only during the free times in the dorm room for personal entertainment. Although FSU campus is a safe place, expensive personal items should not be left in the dorm rooms unsecured. FSU does not assume any responsibility for the lost of items not declared to the Center Director or residential staff.

Leaving the Center Facilities and Campus

Students are not allowed to leave the facilities or campus without the permission of the center director. Students who would like to use campus recreational facilities during the free time must inform the Residential Assistants.

Consequences of Unacceptable Conduct

The conduct and behavior of the students will be monitored by the instructors, assistants, and staff. An unacceptable behavior will be immediately reported to the center director. The director will discuss the reported incidents with the student. In the case of repeated unacceptable behavior, the student may be dismissed from the program.

Faculty and Staff

Oguz Soysal, Program Co- director and Lead Instructor

Hilkat Soysal, Program Co-director and Lead Instructor

Francis Tam, Instructor of Physics activities

Hang Deng-Luzader, Instructor of Physics activities

Eric Moore, Instructor of physics activities

Mohammed Eltayeb, Instructor of Digital Logic activities

Bob Doyle, Instructor of planetarium activities

Greg Latta, Instructor of physics and performer of the "Wednesday evening concert"

Kristin Rosholt, Teaching Assistant

Evren Atli, Teaching Assistant

Dave Treber, Residential Life Director

Allen Paul, Residential Assistant

Jessica Limbaugh, Residential Assistant

Carolyn Bowman, Registered Nurse

Duane Miller, Lab Manager

Wendy Miller, Administrative Support

Tentative Schedule of Activities

July 8 – 13

<table>
<tr><th></th><th>Sunday</th><th colspan="2">Monday</th><th colspan="2">Tuesday</th><th colspan="2">Wednesday</th><th>Thursday</th><th>Friday</th></tr>
<tr><td>07:00</td><td rowspan="6"></td><td colspan="2" rowspan="2">Wake up
Breakfast</td><td colspan="2" rowspan="2">Wake up
Breakfast</td><td colspan="2" rowspan="2">Wake up
Breakfast</td><td rowspan="2">Wake up
Breakfast</td><td rowspan="2">Wake up
Breakfast</td></tr>
<tr><td>08:00 09:00</td></tr>
<tr><td>09:00 10:20</td><td rowspan="2">Intro to BB and Homepage</td><td rowspan="2">Intro. to industrial robots</td><td rowspan="2">Mobile robot prog.</td><td rowspan="2">Robotic Material Handling</td><td rowspan="2">Physics: Motion</td><td rowspan="2">Physics: Power and Energy</td><td rowspan="2">Design Project</td><td rowspan="4">Student Presentations and competition</td></tr>
<tr><td>10:20 10:40</td></tr>
<tr><td>10:40 12:00</td><td rowspan="2">Intro. to industrial robots</td><td rowspan="2">Intro to BB and Homepage</td><td rowspan="2">Robotic Material Handling</td><td rowspan="2">Mobile robot prog.</td><td rowspan="2">Physics: Power and Energy</td><td rowspan="2">Physics: Motion</td><td rowspan="2">Design Project</td></tr>
<tr><td>12:00 01:00</td></tr>
<tr><td>12:00 01:00</td><td colspan="2">Lunch</td><td colspan="2">Lunch</td><td colspan="2">Lunch</td><td>Lunch</td><td>Lunch</td></tr>
<tr><td>01:00 02:15</td><td>Registration</td><td>Mobile Robot structure</td><td>Robotic actions</td><td>Physics: E&M</td><td>Digital Logic</td><td>Digital Logic</td><td>Physics E&M</td><td>Design Project</td><td rowspan="2">Exit survey and feedback meeting</td></tr>
<tr><td>02:15 03:30</td><td rowspan="2">Orientation and check in</td><td rowspan="2">Robotic actions</td><td rowspan="2">Mobile Robot structure</td><td rowspan="2">Digital Logic</td><td rowspan="2">Physics: E&M</td><td>Physics E&M</td><td>Digital Logic</td><td rowspan="2">Design Project</td></tr>
<tr><td>03:30 04:00</td><td colspan="2">Planetarium: Robots in Space</td><td>Refreshments</td><td colspan="2">Refreshments</td><td colspan="2">Refreshments</td><td>Refreshments</td><td rowspan="3">2:00 – 4:00
Poster Presentation
And Closing
Refreshments
Physics Lab: E&M</td></tr>
<tr><td>04:00 05:00</td><td>Team activities: Get to know each other</td><td colspan="2">Free campus activities</td><td colspan="2">Free campus activities</td><td colspan="2">Free campus activities</td><td>Free campus activities</td></tr>
<tr><td>05:00 06:00</td><td>Dinner</td><td colspan="2">Dinner</td><td colspan="2">Dinner</td><td colspan="2">Dinner</td><td>Dinner</td><td>Students leave campus</td></tr>
<tr><td rowspan="2">06:00 09:00</td><td rowspan="2">Free time</td><td colspan="2" rowspan="2">Instructional Evening activities</td><td colspan="2" rowspan="2">Instructional Evening activities</td><td colspan="2">“Cool” Experiments</td><td rowspan="2">Instructional Evening activities</td><td rowspan="2"></td></tr>
<tr><td colspan="2">Physics of Music, Discussion</td></tr>
<tr><td>09:00 10:00</td><td>Dorm</td><td colspan="2">Dorm</td><td colspan="2">Dorm</td><td colspan="2">Dorm</td><td>Dorm</td><td></td></tr>
<tr><td>10:00</td><td>Lights off: Good night</td><td colspan="2">Lights off: Good night</td><td colspan="2">Lights off: Good night</td><td colspan="2">Lights off: Good night</td><td>Lights off: Good night</td><td></td></tr>
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Summer Center for Future Engineers: Robot Design

Crisis Plan

The following describes the actions to be taken in the case of a crisis during the operation of the summer center between July 8 and July 20, 2007.

- In the case of a lockdown, students will remain in the assigned area and all doors will be locked then staff will relay information via the cell phones. Students' safety and evacuation will be handled according to the Frostburg State University Crisis Intervention Plan and Public Safety Office procedures. Teachers and support staff will have a roster of students with emergency phone numbers.
- In all spaces used for summer center activities, such as classrooms, laboratories, workshops, and residence halls, sufficient quantity of bottled water, flash lights, and first aid kits will be available for an emergency situation.
- All laboratories, hallways, and residence halls are equipped with fire extinguishers and alarms.
- All key personnel and residential assistants will carry a cell phone. Any emergency will be reported immediately to the FSU public Safety and the summer center administrators shown below will be notified.
- The key phone numbers are listed below:
    - FSU Public Safety (University Police): 301 687 4222
    - Summer Center director:
        Oguz Soysal
        Cell 301 707 2912
        Office 301 687 7079
        Home 301 687 0325
    - Residential Life Director:
        Dave Treber
        Cell 301 697 9171
        Office 301 687 4020
        Home 301 687 0644
- The crisis plan will be explained to the students and parents during the Orientation Meetings on Sunday July 9 and July 16. The parents will be requested to review and update the emergency information they provided during the application process.
- A copy of the Frostburg State University Crisis Intervention Plan is attached to this document.
- Emergency Codes:
    - Green (Student problems): Contact center director
    - Yellow (Minor gas leakage, smoke, etc. in the room): Move to the CSC 2nd. Floor lobby
    - Orange (Fire alarm, emergency in the building, etc): Leave building, meet under the clock tower
    - Red (Campus-wide emergency): Meet in the FSU Police parking lot