

Exploring Engineer Academy at Georgia Tech May 31 - June 5, 2009

Come join us for another great year as we celebrate our highly successful 8th Annual Exploring Engineer Academy held in conjunction with Georgia Tech. This last summer we had twenty-eight aspiring high school sophomores, juniors and seniors who enjoyed an action packed week full of engineering activities at Georgia Tech thanks to Metro-Atlanta Professional Engineers and the Boy Scouts of America Learning for Life Program.

This next year students will again explore engineering as a career by engaging in hands-on activities. This annual program is sponsored by the Georgia Engineering Foundation and the Learning for Life Division of the Atlanta Area Council, Boy Scouts of America. Much support also comes from the efforts of Volunteers from the Society of American Military Engineers, the Institute of Transportation Engineers, the American Institute of Architects and the American Society of Civil Engineers. Support is also received from professional engineer mentors, sponsoring local corporations, and from donations received from engineering firms throughout the metro Atlanta area who donated scholarships. The Exploring Engineer Academy Committee thanks all that have participated to make this camp a success for the past seven summers.

The 2009 Exploring Engineer Academy will be held from May 31 – June 5, 2009 at Georgia Tech. Please visit Exploring Engineer Academy, corporate-sponsored web site: <http://www.atlantabsa.org/openrosters/ViewOrgPageLink.asp?LinkKey=9658&orgkey=1456> for an application. This year goal is again to have 25-28 engineering-bound students attend this exciting Academy.

Exploring Engineer Academy 2008 – “Highlights In Review” June 1-6, 2008

Sunday afternoon began by greeting students upon their arrival at Georgia Tech for informational meetings with EEA Program Committee Members, mentors, volunteers and organizers to register and obtain their dorm room assignments. Immediately after all were checked in, students enjoyed team-building and ice breaker activities so they could get to know each other. The evening was capped off with a pizza party before settling in for a good night's rest before a very busy week.

Monday was **Civil Engineering Day**, sponsored by the **American Society of Civil Engineers**. The day started with an interesting tour of Georgia Tech's Environmental Sciences Laboratories hosted by Dr. James Mulholland, The students first visited the bioengineering laboratory, where civil engineers and scientists are collaborating to produce microorganisms that can consume the hazardous chemicals at a contaminated site. On the rooftop, the students viewed the apparatus

used to collect air samples to measure air quality levels. In the air quality laboratory, students observed air quality tests being performed for various particle pollutants and smog formation. Next the students viewed a presentation on air quality issues, including graphs showing metro Atlanta's air pollutants levels at various locations, seasons and times of day.

By mid morning the students were off to **Chevron Terminal** with presentations by Chevron district sales manager Mike Slemp and terminal manager Darrow Forbes. The students toured the tank sites used for storage of petroleum products received from an interstate pipeline system. Next the students toured the terminal site where fuel is loaded onto tanker trucks for distribution around metro Atlanta. During the tour, the students learned about petroleum transport, petroleum quality testing and plant safety procedures. After the students enjoyed a great lunch sponsored by Chevron, it was off to the **DeKalb County Scott Candler Water Treatment Plant's 100 Million Gallons per Day (MGD) facility**. The plant senior chemist, Jay Jones, guided the students through the facility that produces all of Dekalb County's drinking water. The students observed firsthand the screens, sediment traps and ozonators that produce DeKalb's clean drinking water. Students were also shown how water is constantly being chemically and biologically tested at the plant and randomly throughout the county's distribution system to ensure quality and safe drinking water for all Atlanta's.

Immediately after arriving back to the Georgia Tech campus, the students started their weeklong **Special Robotics Challenge Design** exercise presented by Dr Barbara Ericson and her Georgia Tech Computer Science students at Tech's Robotics Laboratory.

The evening culminated with an exciting trip to see the **Atlanta Braves** play a home game at Turner Field and enjoy the view from **ARAMARK's** luxurious Sky Box Suite, which included a great dinner. Upon return to the Georgia Tech dorms, lights out could not come too early for the students as they were ready for rest after a long action packed day.

Tuesday was **Transportation Day**, sponsored by the **Institute of Transportation Engineers**. The day began with a trip to the busiest airport in the world, **Hartsfield-Jackson Atlanta International Airport Tech Center**. This year we were fortunate to have presentations and tours guided by airport operations specialists from various backgrounds. Mr. Rob Rau and Mr. John Rone (Civil Engineering), Ms. Norma Click and Mr. Tom Buchanan (Civil Engineering/Environmental), and Mr. Tom Danks (Architecture) allowed students to see behind the scenes airport operations, construction of the light rail line to the new Rental Car Central Facility as well as seeing the many engineering jobs responsible for the efficient operations of running an airport.

Next was a visit to the **Georgia Department of Transportation's Traffic Management Control Center**. On a special tour guided by Mr. Paul Marshall, students learned about the engineering and operational challenges with Atlanta's traffic growth and solutions the Traffic Control Center is implementing. The participants learned about the various traffic monitoring systems and processes for the metro Atlanta area, including the Georgia NAVIGATOR System, Transportation Control Centers (TCC), video monitoring/detection, changeable message signs, and the jobs of Highway Emergency Response Operators (HERO). They had the opportunity to listen to a presentation from

a HERO officer, as well. Street Smarts provided a delicious lunch for the students while at the Transportation Management Center.

Next the group traveled to **Georgia Power** to learn details of the electrical power generation and distribution system that serves the state and to tour the storm center where weather-related outages are managed. Great presentations were given by Georgia Power Engineers Mr. Michael Pearman, Sabrina DeJoannis and Joe White. The presentations not only gave an overview of Georgia Power operations, but they allowed students to hear firsthand the personal experiences of these engineers and how they achieved the accomplishments they have made today.

After a quick stop at the dorms to freshen up at Georgia Tech, the students were treated to a dinner at **Fox Sports Grill at Atlantic Station**, hosted by the intellectual property boutique law firm of **Woodcock Washburn LLP**. The theme of the dinner was "Dinner with Professionals." The purpose of the dinner was to introduce students to professionals that do not have traditional engineering careers, but rather, have used the principles and knowledge gained through an engineering education to work in other fields, such as law and business. Mr Jeffrey Kuo, a financial analyst at **Smith-Barney** and Mr. Robert Madayag, a practicing attorney at Woodcock Washburn, addressed the students. Mr. Madayag, who has a degree in chemical engineering, talked about intellectual property law and about the practice of law in general. Mr. Washburn, a mechanical engineering graduate, then talked about working as an analyst for a large bank. Both speakers are alumni of Georgia Tech, and they welcomed and answered many questions from the students regarding the practice of law.

Wednesday was Mechanical, Electrical and Architectural Day, which started after breakfast with tours of Georgia Tech Colleges beginning with the **Georgia Tech School of Architecture**. This tour of various senior design studios was hosted with a presentation by Mr. William Norris and four associates from the highly respected architectural firm of **Niles Bolton Associates**. After a brief orientation, the students arranged themselves in teams. They were given a design "charet" which involved designing a bus stop for the Stinger, an on-campus shuttle for the university. The students then presented their unique designs to the Niles Bolton Associates team, who later discussed each design and provided positive feedback to the students. The architectural tour was concluded with an excellent presentation by the Niles Bolton Associates staff on the field of architecture and several projects in the firm's portfolio. The time with William Norris and his associates may have even convinced some of these "would be engineers" to become architects!

Next was a short hike to the **Mechanical Engineering School** for a very interesting overview of mechanical engineering by Dr. Janet Allen and tour of ME labs led by Mr. Sterling Skinner, Director of Instructional Labs. Students were so interested in the many student projects demonstrated that they did not want to leave the Senior lab. Although their interest could have gone on for hours, we had to move on to grab a bite for lunch.

After lunch at Georgia Tech, the afternoon began with a distinguished tour of the **School of Electrical Engineering Microelectronic Research Center**. The tour, hosted by Dr. David Gottfried, was exceptional. After an initial briefing on nanotechnology, he led the group through the state of art clean room explaining its inner workings. Another research scientist, Dr. Ken Pikarsky,

demonstrated a high-powered electron microscope. Thanks to a student volunteer, the group saw a drop of blood magnified to the molecular level.

Following the Microelectronic Research Center, it was back to the **Special Robotics** Problem where the student teams spent most of the afternoon programming and modifying robots to dance or complete an obstacle course.

After dinner at Georgia Tech, the students visited the **Delta Airlines** headquarters. Students witnessed firsthand the extensive flight maintenance operations run by engineers, which are required to not only make sure every airplane is safe to fly, but that their work flow is managed effectively and efficiently. Students were also treated to an exciting visit to the **Delta Training Center** for pilots and airline crews, seeing the extensive training each Delta aircrew member must constantly receive to qualify for flight readiness. Delta's Mr. Winston Whitlock provided the highlight of the visit for the students when they were allowed to strap into the multi-million dollar flight simulator of a full mockup version of a Boeing 767, and each was allowed to "Land" and "Take Off" from Hartsfield's runways on this computer simulator! Needless to say this simulator was a great educational and fun experience for all students.

Thursday was **Aeronautical Day**, but first the students focused on the University. Mr. Ken Little and Mr. Rick Clark presented important information about the **Georgia Tech Department of Admissions** and the **Georgia Tech Co-Op Program**. Through this presentation, students learned of the requirements for admission to Georgia Tech's engineering program. Additionally, students were told what the admissions office looks for when determining which applications to accept as well as the benefits of the Co-Op program.

After learning what it takes to get into Georgia Tech to become an engineer, it was off to **Lockheed-Martin Aeronautical Systems Manufacturing Facilities** in Marietta where the group spent most of the day with Doug Hill. Here, the students enjoyed a fantastic, once in a lifetime look at state of the art in design and manufacturing of the F-22 Fighter and C-130J Transport aircraft. The group was not only able to get within 20 feet of touching an F-22 just off the assembly line, but were able to walk the entire C-130J assembly line on a production line tour guided by Dan Jones and Lindsay Rausch from Core Engineering. Karen Albrecht, Site Engineering Director briefed the group on Engineering activities and opportunities. Needless to say, the students obtained a wealth of information from the briefings and the tour.

After returning to the Georgia Tech campus, the group ate dinner and participated in the final round of the **Special Robotics Problem Competition**, put together by Georgia Tech's Robotics **College of Computing** and their students. The night's activity concluded with an evening of fun, competitive, team sports activities on the Georgia Tech campus.

Friday began with an interesting session on **Industrial Engineering** and **General Engineering Career Opportunities** organized by Engineer Mr. Jack Lindsay. After breakfast, the students gathered outside into teams to design the best paper airplane. A winning design (longest flight) was chosen from each team and the students then analyzed the winners for design & production similarities. This then led to a general discussion of Industrial Engineering and the traits that

distinguish IEs. Mr. Lindsay closed with a discussion of the career outlook for various engineering specialties including starting salaries and employment outlook.

The rest of the day focused on Mechanical and Industrial Engineering opportunities with a trip to **Six flags Over Georgia Amusement Park**. Students were given a presentation on amusement park engineering and safety by the Six Flags orientation team. There was a very lively question and answer session where the students peppered the presenter with questions about ride design and operation. Students also learned that extensive engineering operations are necessary to design safe rides as well as to daily maintain and inspect the rides to ensure safety. Before given time to ride their favorite park rides, the students were treated to a behind the scenes look at the Goliath roller coaster.

After a lot of fun at the park, the students returned to the Georgia Tech campus late afternoon to meet their parents, to get packed and to check out of their dorm rooms. The week culminated at the **Georgia Tech Student Center** with a **Banquet Dinner** for parents and students and an inspirational speech by Mr. Chris Cooper, a graduate of Morehouse College and Georgia Institute of Technology, who motivates, instructs, inspires and empowers audiences of all ages to execute their passions. His message was that life takes you in many directions, but being an engineer opens doors and exciting opportunities. Chris gave a powerful review of his book, [Achieve Your Dreams](#), which presents 26 quick keys to succeed in life. At the conclusion of his speech, the audience gave him a standing ovation.

From all accounts, EEA 2008 was not only the largest but the best camp yet since it began seven years ago. We expect next year's program for EEA 2009 from May 31- June 5, 2009 to be just as fun and exciting. Attendance is limited, so mark your calendars and get the word out to perspective students.

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