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EVENT CALENDAR

December 16-18, 2006
Nature Inspired Innovations Toward a Sustainable Environment. Organized by RETBE (Role of Engineering Toward a Better Environment Alexandria, Egypt

December 17-21, 2006
2nd IEEE International Conference on Signal Image Technology Hammamet, Tunisia

February 11-14, 2007
Middle East Electricity Exhibition and Conference Dubai World Trade Center, UAE

February 24, 2007
1st AUD Engineering and Technology Fair AUD, UAE

March 13-15, 2007
Water, Energy, Technology and Environment Exhibition (WETEX 2007) Dubai World Trade Center, UAE

March 23-27, 2007
2nd International Conference on Modeling, Simulation and applied Optimization (ICMSAO'07) Petroleum Institute, Abu Dhabi

Message from The Dean



Dr. Alaa Ashmawy, P.E.
Dean of the School of Engineering

Since its official inauguration in 2003, the School of Engineering at the American University in Dubai has been the flagship of engineering education in Dubai. As I complete my first semester as Dean of Engineering, I envision greater opportunities in the years to come, especially in terms of the relationship between AUD and Dubai's engineering community. Our short-term plans include a master's degree in construction management in collaboration with the School of Business; a professional center for design and simulation with emphasis on traffic planning and management; and a number of synergistic activities with AUD's regional friends and partners. Next year, we are also slated for accreditation visits by the Ministry of Higher Education and ABET. Our student enrollment has reached record numbers, and an aggressive student recruitment campaign is underway to attract the best and brightest to our selective programs.

The *Engineering Axis* will be our link with Dubai's engineering community. Its production is a culmination of our faculty and students efforts. The quality of the publication is a manifestation of the outstanding abilities of our students who are assuming all editorial and reporting responsibilities. I truly hope you will enjoy this and future issues which will appear on a quarterly basis. Let us hear from you if you have any comments, suggestions, news, or featured contributions.

AUD Seminar Series

Every other week, our school hosts an industry or academic professional to present as part of our seminar series. Such presentations expose students to real world applications of what is taught in the class-

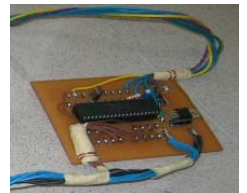
room. In addition, guest lecturers can showcase their organization's achievements and explore collaborations with faculty and students. Recent speakers include **Dr. Riyadh Aboutaha** from Syracuse University, USA, who presented the latest on FRP Composites; **Eng. Nazek Al Sabbagh** from Dubai World,

Research Spotlight

Dr. Lana Chaar

Fossil fuels currently supply most of the world's energy, and are expected to continue for several years to come. However, while supplies are currently abundant, they will not last forever. Oil production is declining while the energy demand is increasing as economy grows and nations develop. The Clean Air Act of 1970 raised concerns about public health, as well as effects on the climate and global warming. Sustainable, green, and clean sources that produce very few—if any—pollutants are the solutions to these concerns.

Besides nuclear and geothermal, all other forms of renewable energy are derived from the most effective and harmless source: the sun. Solar energy technology is straight forward to use and is penetrating the market at a fast rate. Two weeks ago, I attended the "German Solar Energy Symposium", organized by the **German Industry and Commerce**, in Abu Dhabi in a way of supporting



(Continued on page 3)

who outlined her Department's involvement in projects around Dubai; and **Dr. Saman Adham** from Logic Vision, Canada, who outlined his latest work on embedded microprocessors. The School of Engineering appreciates the efforts of the speakers, and looks forward to additional presentations next semester.

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Introducing our Faculty



At the AUD School of Engineering, our faculty represent diverse backgrounds, with all members having earned their degrees and taught at internationally recognized universities. The faculty cover three engineering disciplines: Civil, Computer, and Electrical. Our faculty work very closely with each other and with their students. The small size and the interdisciplinary nature of the School of Engineering provide a learning environment that is unparalleled in other universities.

The **Civil Engineering** Group comprises specialties in geotechnical engineering, behavior of concrete, structural dynamics, and construction management. **Dr. Alaa Ashmawy**, the Dean of Engineering, received both M.S. and Ph.D. degrees in Civil Engineering from Purdue University, and his B.S.C.E. from Alexandria University. Before joining AUD, he was Associate Professor at the University of South Florida in Tampa.

Dr. Elias Saqan, received both M.S. and Ph.D. in Civil Engineering from the University of Texas at Austin and B.S. in Civil Engineering from the University of Houston. He was a faculty member at Birzeit University, and a Fulbright Scholar at Purdue University before joining AUD.



Prof. Ahmad Bassiouni is a Ph.D. Candidate in Civil Engineering at Pennsylvania State University. He holds a Diploma in Environmental Engineering and B.S. in Construction Engineering from the American University in Cairo.

The expertise of the **Computer Engineering** faculty spans the areas of computer architecture and systems, embedded systems, pattern analysis, machine intelligence, mobile and wireless computing, networking, software engineering, and neural networks.

Dr. Wathiq Mansoor holds a Ph.D. in Computer Engineering from Aston University, an M.S. in Electronic Engineering from the University of Technology, and a B.S. in Electrical Engineering from Baghdad University. He



has more than 10 years of experience in academic and industry organizations, and is a regional CISCO certified instructor.

Dr. Wael Bazzi received his Ph.D. in Electrical & Computer Engineering from University of Waterloo and both his M.S. in Communication Engineering and B.E. in Electrical Engineering from the American University of Beirut.



Dr. Ali El-Haj-Mahmoud received his Ph.D. and M.Sc. in Computer Engineering from North Carolina State University at Raleigh and his B.E. in Computer and Communication Engineering from the American University of Beirut.



Our **Electrical Engineering** faculty possess a wide range of expertise in the areas of communications, digital signal processing, electromagnetics, microwave/antenna design, power electronics, and renewable energy.

Dr. Boutheina Tlili received her B.S., M.S., and Ph.D. in Electrical Engineering from Michigan State University. She was on the faculty of the prestigious Ecole Supérieure des Communications de Tunis before coming to AUD. She is the chair-elect of the UAE-IEEE Women in Engineering Committee.

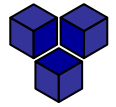


Dr. Hamid Shafiee received his Ph.D. in Electrical Engineering from the University of Minnesota and both his MS and BS in Electrical Engineering from Iowa State University. Before joining AUD, he was on the faculty at Teheran University. In addition, he has more than 10 years of experience as an industry professional.



Dr. Lana Chaar received her B.S. M.S., and Ph.D. in Electrical Engineering, from the University of Minnesota. She is an IEEE senior member, and a past lecturer at the American University of Beirut. She also worked with Schott Power, a subsidized company of Ford on their electric vehicle charger design.





Field Trip to Jebel Ali Cement Factory

On November 7th, 2006, civil engineering students enrolled in CENG 331 – Engineered Materials went on a field trip organized by the class instructor Dr. Ahmed Bassiouni to visit the Jebel Ali Cement Factory in Jebel Ali Industrial Area. The purpose was to let students observe the production process of one of the most widely used construction materials which is Portland cement. Upon arrival, AUD group was warmly welcomed by Mr. Ajay Acharya, Director of Strategic Planning and Business Development and Mr. K.C. Jha, General Manager for Production and Operations. Mr. Jha led the visitors to

the factory control room where he thoroughly explained the sequence of cement production steps and how each is being automatically monitored by control room operators. Afterwards, AUD group went on a tour to explore the different factory units. The tour started by the vast covered storage yard for the imported cement clinker, passed by the grinding mill where clinkers are crushed into cement powder of desired fineness and ended at the multi-compartment silo where the produced cement is stored. Loose cement is either directly dispensed



from the bottom of the silo into customer trucks or is moved to the packing plant to be placed into bags (50 kgs) that are transported by conveyor belts to storage.

Research Spotlight (continued from p.1)

(Continued from page 1)

German companies in the field of renewable energy in entering the UAE Market especially in the field of solar power. Since GCC countries lie within the solar belt with solar radiation of more than $6\text{kWh/m}^2/\text{day}$ and more than 80% clear sky throughout the year, integrating solar energy allows the extension of fuel life. The solar technology that has the most impact on our lives is Photovoltaic, not in terms of amount of power generated but since it is silent, non pollutant and provides power where no other forms of energy is available. Photovoltaics (PV) systems are becoming more and more attractive due to several factors such as reliability, modularity, simplicity, and image.

The United Arab Emirates is a diligent contender in the pursuit of renewable energy due to its climatic and geographic conditions. There

are on average eight hours of sunlight per day during winter and eleven hours per day during summer, in addition to the wide spaces which can effortlessly accommodate huge solar panels. However, one main problem stems from the use of these sources of energy in climatic conditions such as the UAE which experiences continuous high temperatures alongside the occasional strong winds resulting in perpetual sandstorms. The effect of very little rainfall, humidity, and sandstorms helps wind-borne particles to accumulate on the surface of PV arrays, thereby affecting the overall efficiency of the solar panels.

All these factors attracted me to initiate a research program on Photovoltaic arrays. The research studies the effects of the problems mentioned above, develops and tests mathematical simulation models. Also, some of our students are developing practical solutions to reduce the problems PV might face when used in the Gulf region. A high efficiency solar-powered traffic light control (see pictures) was designed and built, and is currently being implemented on a large scale.



I would like to extend my appreciation to Engineer P. Suri from Microsol International, FZE who has been a great support and donated 6 PV arrays to maintain this research. Also a sincere thanks to Engineer Fadi Maalouf from Specialised & Interactive Systems LLC for donating a flexible PV array and a battery Charger.

Dr. Lana Chaar is an Assistant Professor of Electrical Engineering at the American University in Dubai received her Ph. D. degree in Electrical Engineering from the University of Minnesota specializing in Power Electronics. She taught at several universities, including the American University of Beirut and Beirut Arab University. Her main research interests are in the area of Renewable Energy, in particular Solar and Wind Energy.



Trip to Ducab Cable Company



By Ali Said Jamaledine
Undergrad Elec. Engineer

At AUD, engineering is not just about theory or laboratory experiments. It is the chance to reach out and explore the industry. To make sure students are aware of the industry they will graduate into. To further that goal, on the 16th of November, 2006 Junior and Senior Electrical Engineering students visited the Ducab to see how what they learnt in class applied to the manufacture of cables.

Upon arrival, the health and safety manager, Mr. George greeted the students. A set of presentations followed regarding the history, the mission statement, the excellences of Ducab,

the employment and the details on manufacturing power cables.

Students were then toured around the factory. They saw manufacture of cables beginning with raw copper rods to the final product as per application. The sites visited in the factory were not limited to the actual manufacturing only; students were also exposed to the control mechanisms implemented in the factory. These are used to ensure that Ducab always produces the highest quality cables.

Most students were able to comprehend and understand the technicalities of the manufacturing process. This may have been due to the Energy Engineering (CEEE395) / Power Systems

(CEEE371) courses every student was enrolled in.

Dr. Lana Chaar (Assistant Professor of Electrical Engineering) who teaches both courses organized the trip. She especially wanted to thank to Dr. Graham, Mr. George, and Ms. Raaisy of Ducab for their cooperation in organizing what was a very educational trip.



Working w/PS3 @ GITEX

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Shreya Dungarwal
Junior,
Computer Engineering



Not until it was only 2 weeks for the GITEX to kick-off, had I decided whether or not I should take up a part time job at the exhibition. I kept juggling between the two ideas - Having to miss school for 7 days (and for engineering students, this *isn't* a joke), work long hours at the exhibition and yet come back home and work on meeting deadlines for assignments, over the attraction of actually working with a multinational company and tasting what they call the 'real world'. Inevitably, I found myself at the interview for the Sony PS3 GITEX exhibition the week prior to college, and soon after realized that I was already selected. Glad I was at the fact that I would present a much-awaited product to more than 1000 potential consumers. Yet, worried I also was for my studies. I decided to take the challenge and make the best I could of it. We were trained rigorously for two and a half days and I brushed up a lot of my

presentation skills. Considering that it's been 2 years since the PSP class at college, this was a good revision! They also trained us on the technology behind PS3 and its features so that was a learning in itself too. Then the D-day arrived, the first day of GITEX when we were going to give live demos of the products and present to the audience its features.

The presentations took off really well - I battled the butterflies of nervousness for the first 2-3 presentations I gave, but soon I took off in such a way I surprised even myself. Before the end of one presentation, I could see a line of 20 people waiting for me to begin again. This went on for 5 days all day, and I came back home excited because with each new day you met so many different people, interacted with so many others. The part that I loved the most about my job was the time we got to interact with the Sony PS3 employees. I learnt a lot about their work, their organization, their work life, etc. by simply chatting with them during our

breaks. All these pluses aside, one of the biggest advantages of working at GITEX is the extra pocket money you make. The money is good enough to seize one of the GITEX offers for yourself! All in all, a fantastic experience no one, in my opinion, should miss during college years.

AUD @ IIT-06

The 3rd International Conference on Innovations in Information Technology (IIT) was held at Jumeira Beach Hotel from the 19th – 21st of Nov. 2006. The renowned conference was inaugurated by H.H. Sheikh Maktoom Bin Mohammad Bin Rashid Al Maktoom, and witnessed the advent of two distinguished keynote speakers: Mr. Bill Thomas, Executive Vice President of Electronic Data Systems, and Dr. Peter Freeman, Assistant Director of the US National Science Foundation for Computer & Information Science & Engineering. AUD Engineering and IT faculty chaired technical talks and tutorials during the event. Bashar Al-Rawi, a Senior Computer Engineering student at AUD, presented a paper entitled: Solving Employee Timetabling Problems Using Boolean Satisfiability.

Before the end of one presentation, I could see a line of 20 people waiting for me to begin again