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## Academic Services

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## Science Speaker Series

Many scientists say that one day as a young student, they just stumbled across a machine or a natural phenomena or a particular aspect of nature that was so incredible that it caused them to pursue that field of study. The speaker series helps students find that field of science that grabs their passions and fires them up for a lifetime of study.

The LSMSA Science Speaker Series consists of talks given by university professors and other professionals from around the state. Some of the topics that guest speakers discuss include their field of study, their career, their research, and their institution. Some guests describe the research being done in their departments so that our students would know what sort of research they would be doing if they choose to attend that university. This helps our students pick a college. Some speakers also give general advice on picking a college. The speakers are often looking for students to help do research in their laboratory. The speaker series helps arrange summer internships for students and builds connections between LSMSA and these other institutions.

Talks are held on Friday's from 4-5 pm, usually in the CPT Recital Hall.

### 2011 - 2012 Speaker Series:

Aug 26: Dr. Elizabeth Elder from the LSU-A Biology Department

Sept 23: Dr. Joel Tohline from LSU will discuss astronomy.

Oct 21: LSMSA Alum Marcus Toussaint will describe his research at LSU and Caltech and answer your questions about college.

Nov 4: Curtis Desselles has college degrees in several fields, is an inventor, and does research at the NCPTT.

Jan 13: Michael Aristidou presents "Beyond Ordinary Numbers: Quaternions and Applications in 3-d Animations". Abstract: The real numbers are 1-dimensional creatures. Are there numbers in higher dimensions? We introduce some higher dimensional numbers, called quaternions, and present some of their mathematical properties and applications in computer science, such as 3-d animations. We conclude with some project ideas, some of which are suitable for students.

Jan 20: Dr. Brian S. Mitchell, Professor, Tulane University presents "From Silly Putty to Superconductors: Careers in Materials Science and Engineering." This is sponsored by the LA Board of Regents SoS Program.

Feb 10: Dr. Kinsland from ULL presents "So You Think Louisiana is Flat." This is sponsored by the LA Board of Regents SoS Program.

Mar 16: Dr. Malay Ghose-Hajra from the University of New Orleans presents "Restoring Coastal Louisiana – Benefits and Challenges." This is sponsored by the LA Board of Regents SoS Program.

Mar 23: Lothar Birk from the School of Naval Architecture and Marine Engineering, University of New Orleans.

April 13: John P. Doucet, Ph.D., CPHG, Dean of the College of Arts and Sciences at Nicholls State University, will speak on his work in molecular and human genetics, as well as student opportunities in the Department of Biological Sciences and the University Honors Program.

### 2010-2011 Speaker Series:

Sept 10: Dr. Judith Schiebout, Associate Curator, LSU Museum of Natural Science, and Professor of Geology and Geophysics, Louisiana State University and A&M College, presents "The Parade of Ancient Life in Our State." This is sponsored by the LA Board of Regents SoS Program.

Sept 17:

Oct 8: Dr. Nick Norton from SELU will discuss the biology program, undergraduate research opportunities

in the department, and some of his work at Fort Detrick, Maryland, where the army conducts their biological warfare based research.

Oct 22: Dr. Leonard Spinu, from the University of New Orleans presents "From Chemistry Lab to Computer Hard Disk." This is sponsored by the LA Board of Regents SoS Program.

Nov 12: John P. Doucet, Ph.D., from the Department of Biological Sciences at Nicholls State University will discuss the biology department, the Honors program, faculty research, and his own research.

Jan 14: Carol S. Chin, Ph.D., from the National Center for Preservation Technology and Training and Northwestern State University presents "Exploring an icy ocean for deep-sea hot springs." Dr. Chin will talk about oceanography and research in the Antarctic.

Mar 18: Dr. Sushma Krishnamurthy, Professor and Department Head of Biology at the University of Louisiana at Monroe, will discuss biology and research at ULM or in the HHMI program.

Mar 25: Taneka Aristidou presents "Engineering Green."

2009-2010 Speaker Series:

Oct 2: Juana Moreno, Dept. of Physics and Astronomy & Center for Computation and Technology, Louisiana State University presents "New magnetic materials for spintronics."

Oct 23: Jon R. Geiger, Ph.D. will discuss the Jackson Laboratory, in Bar Harbor Maine, and the summer research opportunity for our juniors. More information about summer research

Jan 15: Dr. Sushma Krishnamurthy, Professor and Department Head of Biology at the University of Louisiana at Monroe.

Jan 29: Melba A. Horton, Ph.D. Department of Biological and Environmental Sciences McNeese State University

Feb 26: Anita S. Kablinger MD is a professor in the Department of Psychiatry and Pharmacology at LSUHSC Shreveport.

Mar 19: Dr. Mark Merchant, Assistant Professor of Biochemistry, McNeese State University, presents "Disease Resistance and Wound Healing in the American Alligator." This is a LA-Regents SoS presentation.

Mar 26: Forensics

April 16 CPT Recital Hall: Dr. Ron W. Darbeau, Associate Professor and Chemistry Department Head, McNeese State University presents "Chemicals, the Environment, and You." This is a LA-Regents SoS presentation.

2008-2009 Speaker Series:

Sep 19: Jon R. Geiger, Ph.D. will discuss the Jackson Laboratory, in Bar Harbor Maine, and the summer research

opportunity for our juniors.

Oct 31: Dr. Sumeet Dua of LA-Tech discusses data mining in "What more can your data do for you"

Nov 7: Dr. Laura Whitlock of LSUS presents "Black holes and the infinite universe"

Dec 5: Mark McKelvy, who is an LSMSA alum, will discuss Team CajunBot's experiences developing a completely autonomous vehicle for the DARPA Urban Challenge. Mark is assisted by project leader Dr. Suresh Golconda.

Jan 16: Karen Kilpatrick of the U.S. Fish and Wildlife Department discussed careers and life in science.

Jan 23: "Louisiana Builds a Satellite" by Dr. Paul Darby, professor of Electrical and Computer Engineering at UL Lafayette. The ULL team designed and built the CubeSat Pico Satellite -- completed in 2007 and called Cape I -- Cajun Advance PicoSatellite Experiment. The satellite was launched from Russia and successfully communicated with our earth stations and other earth stations, globally. It's only mission was to be a proof of concept and to test the satellite health. UL EECE is now designing and building Cape II -- which is intended to have an expanded mission of an educational parrot repeater, support of ground initiated DTMF control, and to communicate with ocean buoys around the globe to accumulate data on water temperature, currents, and salinity, to name a few.

Feb 6: Dr. Julie Delabbio presents "Biosecurity"

Feb 13: "Pharmacogenomics" by Jeff Evans, Pharm.D., professor from the ULM College of Pharmacy.

Mar 6: Dr. Steven Hall from LSU will talk with us about "Drinking like a fish: Water quality in aquaculture"

Mar 13: Dr. Margaret Hodge presents "From webs to body armor: the beauty and benefits of spiders"

#### 2007-2008 Speaker Series:

Sept 7, Meg Fitzhugh discussed the work of a nurse practitioner and that a nurse has many choices and can easily move between specialties. She recommends that new nurses quickly get ICU experience because it is "marketable" knowledge. Meg explained that it is very rewarding to help people. We concluded that, of all the occupations in the world, nursing wins the prize for compassion. Nurses walk from room to room, dispensing compassion once every few minutes.

Oct 5: Stassi DiMaggio, Ph.D., Assistant Professor of Chemistry, Xavier University of Louisiana.

Nov 2: Rebecca Prosino, Space Center Director, Sci-Port Discovery Center

Nov 9: Climate Change and Coastal Louisiana by Virginia Burkett, Ph.D., Chief Scientist for Global Change Research, U.S. Geological Survey.

Dec 7: Richard Rogers from the Pennington Biomedical Research Center

Jan 25 Dr. Daniel McCarthy present "Fusion Energy – Creating a Star on Earth"

Feb 15: Greg Seab from the Physics Department at the University of New Orleans.

Feb 22: Dr. Gary Kinsland presents "The Chicxulub Impact – The Collision That Killed the Dinosaurs"

Apr 4 Arthur Perkins, Sr. Ecologist at Dixie Environmental Services, Co., will have recommendations for students who want to pursue a career in field biology and he will discuss three types of projects, why the work is done, and the process in 1) threatened, endangered and rare plant and animal surveys, 2) Wetland delineation, permitting and

mitigation design, and 3) Vegetation/habitat mapping. He will explain and describe examples illustrating the types of projects listed above, including 1) Badcaw 3D seismic survey, 2) Kissatchie National Forest, threatened, endangered and rare plant and animal surveys, 3) Big Thicket National Preserve, Vegetation Mapping and wetland delineation for oil and gas exploration, measure impacts. Anahuac NWR wetland delineation for oil and gas development, and 5) Eagle and raptor nest surveys, 6) Water quality sampling, 7) Macroinvertebrate sampling 8) Vertebrate surveys, and 9) Coral reef surveys

Apr 11 Dr. Gary Birkenmeier from ULL presents "Careers in Mathematics and Mathematical Research"

Apr 18 Ben Apperson from NSU will discuss the archaeology and history of Fort Jessup and he will describe careers in Anthropology.

#### 2006-2007 Speaker Series:

Astronomer Lee Powell discussed "Tidal Steams in the Milky Way: An Observational Study." An LSMSA student who attended the talk said "His presentation was very intriguing, I loved all the graphs and pictures. I also loved the math aspect his briefly described to us. I think it would be pretty awesome to be able to make images like that using math and science combined."

In her talk "The past, present, and future of radiological technology," Sandra Franklin from LSU-A discussed health science careers involving medical devices such as x-ray and MRI machines. An LSMSA student said "I really enjoyed the presentation by Mrs. Sandra from LSU. Since I have taken dozens of x-rays and many MRI's I felt as if I benefited greatly from learning about what goes on behind the scenes. Also, I had some experience with these scans during the summer when I did research at Pennington Biomedical Research Center. So, this gave me an opportunity to ask questions that I didn't get to ask this summer. It also gave me a more in depth look at how these scans work since I only had knowledge of what these scans were used for. I found the length of the presentation, considering the amount of information covered, to be great. I also found that the graphics used to be very helpful when discussing different topics. Overall, I give this presentation an A."

Faculty members from NSU's biology, chemistry, and physics department described their research. LSMSA students begin nearly as juniors if they chose to attend NSU for college. One LSMSA student said "I enjoyed listening to the visiting faculty members from NSU the other day. I thought all of what they had to say was very interesting and I learned about what kind of research opportunities are available here locally. It is great that Louisiana School students have the opportunity to participate in some research programs while in high school and then if we decide to go to NSU for college we could graduate in about two years. Sometimes LSMSA students feel alienated from NSU even though we live on their campus. But after this meeting, I think that we both understand each other much better."

Tabbatha Dobbins from LA-Tech described her research in nano-science. Of all the fields of science, nano-science and neuroscience are entering Golden Ages that make them particularly inviting to new scientists. She was accompanied by a colleague who had just returned from a tour of duty in Iraq. We took advantage of his presence and held a question and answer session with him, too.

Dr Brotherton from the Chemistry department of the University of Louisiana at Monroe described a number of research projects being conducted by the faculty in Monroe.

Cynthia Sisson from the physics department at NSU-S described her research in developing a new brain imaging technique. The title of her talk was "Photons in tissue - Monte Carlo Simulations of Near Infrared Laser Light in the Brain." Dr. Sisson described how she can determine the size and location of tumors and such. Dr. Sisson discussed the use of Monte Carlo simulations in modeling the diffusion of light in tissue, in particular in the propagation of Near-Infrared (NIR) laser light in a human head. In general, Monte Carlo simulations use the optical properties of a sample, such as the absorption and scattering coefficients  $\mu_a$  and  $\mu_s$ , the index of refraction  $n$ , and the scattering phase function to characterize the material being modeled. By combining regions with different optical properties, samples ranging from simple slabs to complex multi-regioned systems with inclusions can be modeled. In these simulations, sources at the surface of the sample "launch" photons into the sample, and

individual photons are followed as they scatter and are absorbed by the material. At the surface, detectors analyze any photons that are scattered back out of the sample. The detectors record relative signal strength as a function of time, average arrival time, and total signal at each detector. By following hundreds of millions of photons (more or less depending on the optical density of the sample) sufficient signal is generated at each detector to predict experimental results. Two possible applications of this process – one for stroke, one for edema – are discussed as a future direction in medical imaging.

Feb 9, architect J Bridges discussed the educational requirements for becoming an architect. He also discussed what it is like to run an architectural business.

March 2: Ana Pere, M.D., discussed the medical profession. She advises students to enroll in an MCAT preparation course, take a wide variety of courses in biology, volunteer in a health organization, take business courses while in undergraduate school, and take the most difficult courses one at a time during the summer, while there is time to devote to a single course.

Mar 9, LSU-A biology professors Carol Corbat and David Huey will talk about their research as well as what motivated them to get into biology as a career. They will explain that one of the strengths of their department is undergraduate research. David is a fish physiologist and aquatic toxicologist. Carol is broadly trained in wildlife biology and forestry and has worked mainly with birds and herps in recent years. Students who choose to enroll in the LSU-A biology Department will have the benefits of a small school, upper division courses typically have 6 students, undergraduates conduct research, and students are constantly taken out into the field.

Mar 23, Centenary College of Louisiana biology professors Cynthia Brame (cell biology), Beth Leuck (organismal and conservation biology), and Greg Butcher (neuroscience). Beth Leuck will talk about the Centenary biology curriculum and especially their studio-format classes and her research on double-crested cormorants (diving birds). Cynthia Brame will talk about the cell and genetics courses she teaches, research opportunities for Centenary students, and her research in proteomics. Greg Butcher will talk about the neuroscience program at Centenary, research opportunities for Centenary students, and his research in circadian rhythms.

Mar 30, Tanya Sturman and Quentin Morris from the Fish and Wildlife Department talked about alligator biology and brought the discussion to life by bringing a baby alligator.

April 20 Environmental Fair with Eddie Nillhollon of LSU Ag-Center's Red River Research Station, Tonnee Davis of Kisatchie National Forest, and Kevin O'Brien of the Department of Environmental Quality.

April 27, "Neuroscience" by Li-Ru and Wei-Ming Duan, M.D., Ph.D., Assistant Professor in the Department of Cellular Biology & Anatomy at LSU-S Health Sciences Center

