

Inside this issue:

Student Perspective: Colin Dean, EAS	2
Changes in Research Option Program	2
Undergraduate Research Participation Statistics	4
Mentoring Workshop	5
International Research Interview w/Emily Weigel, BIO and Georgina Schaefer, CHBE	6
Presenting at MRS Conference Justin Nguyen, PTFE	7
Research in Music Andrew Ash, CS	8
Spring PURA Application Deadline	10
UIROP Workshops and Events	11

Find Out
About
Changes to
the
Research
Option
Program
(Page 2)

Undergraduate Research Shaped My Career Path

by Dana Forsthoefel, PhD Student in ECE

As an undergraduate, I worked on automated video analysis for video surveillance as part of a multiple-semester Undergraduate Research Opportunities Program (UIROP) project under the direction of Dr. Linda Wills in ECE. I developed an approach to automatically detect illegal parking activity in high traffic areas using video surveillance, such as double parking and parking on pedestrian walkways. This parking application requires finding objects that enter a scene and become stationary. These are classified as “midground” objects – non-ephemeral objects between the extremes of foreground and background. Since illegal parking activity occurs largely in areas of high traffic flow, my approach was to first detect midground objects, filter out objects that did not satisfy vehicu-

lar constraints, and identify those that overlapped with high foreground activity regions over time. My approach flexibly modeled vehicle constraints so that it could correctly recognize vehicles (as opposed to pedestrians, for example) and detect illegal activities in various environmental conditions. This project was an independent research project that built on and extended background and midground modeling techniques developed in my advisor Dr. Wills’ research group. I extended these models with object recognition and grouping techniques and with activity region analysis to solve the challenges of this task.

Performing this independent research enabled me to take a leadership role in my undergraduate senior design project. My group designed and built a



prototype image-processing system that could autonomously command blind robots to perform tasks based only upon analysis of a real-time video stream. The project required real-time capture and analysis of streaming video and image processing algorithms for detecting and tracking the robots. Our resulting autonomous system was capable of guiding robots to user-specified destinations in an open field using only video input of the scene to determine real-time robot behavior. This senior design project was a

Undergraduate Research News

Student Perspective: Colin Dean, EAS



I was first introduced to the notion of undergraduate research when my current advisor, Dr. Martial Taillefert, filled in as a substitute teacher in my Geochemistry class. Halfway through a particular lesson, he digressed and spent some time explaining his own research—which focuses on analytical approaches to environmental biogeochemistry—and encouraged the class to consider approaching pro-

fessors about research they found interesting—explaining that all you have to do is ask, that professors are usually overjoyed to find undergrads interested in their work. To shorten the story, his lab's focus intrigued me, I took his advice (which I also give to everyone else, now) and simply asked him at the beginning of the next semester if I could work in his lab (obtaining course credit) that semester—simple as that.

We discussed several projects, and I have been working on two for the past 6 months. The first I came up with mostly on my own: it focuses on phosphate (an important nutrient and anthropogenic pollutant) and how it cycles through

microbe-rich, anoxic sediments in salt marshes off the Georgia coast (Savannah), a unique environment in which bacteria reduce iron and sulfate to break down organic matter in the absence of oxygen. Ultimately, characterizing this cycling has huge implications for understanding eutrophication of estuaries and shallow coasts, as well as constraining the carbon cycle for similar environments. Besides the intellectual benefits, this project has also given me the opportunity to take several field trips out to the coast to take samples and observe the natural environment I study. Many people tend to view science as “boring”, or at the very

least, tedious: I must say that there is nothing boring about trudging through the mud of a salt marsh (see picture), fighting off hordes of fiddler crabs and vicious shrimp in order to reach parts of an ecosystem that likely have never been studied before.

The second project Dr. Taillefert suggested to me utilizes a novel and advanced electrochemical technique known as voltammetry, in which I construct (in the lab) electrodes that are capable of measuring several dissolved chemical species (iron, sulfide, manganese, and oxygen) to study chemical reactions that occur in the estuarine

Continued on page 3

Requirement Changes in Research Option Program

Following three years of implementation of the original Research Option plan outlined in Georgia Tech's Quality Enhancement Plan (QEP), several aspects of the program have been assessed in various means

including focus groups, writing quality rubric evaluations, and administrative experience. As a result of such assessment and in speaking with past instructors of the currently required thesis writing

course (LCC 4700) and the schools currently participating in the Research Option, the Undergraduate Research Advisory Group (URAG) proposed that the current two-hour LCC 4700 Thesis writing course,

a requirement of the Research Option, be split into two 1-hour courses. Course content would not change, however, the timing of student's completion of the courses will change.

Continued on page 8

Colin Dean..cont'd from page 2

environment. In particular, I am attempting to quantify a recently discovered, poorly understood soluble iron sulfide species “FeS “. This complex forms when Fe(III) (commonly found as rust) is reduced in the presence of hydrogen sulfide (another product of bacterial respiration). “FeS” represents a possible intermediate that speeds the formation of the mineral pyrite (fools gold), which is the world’s largest reservoir of reduced sulfur.

My projects offer me all the things I believe to be necessary in work: an opportunity to work with my hands, a self-directed project, opportunities for travel, and a chance to solve new (and exciting!) problems on a daily basis (and for the altruistic, this work may just be saving the world!) Additionally, this experience has provided me with an arena in which to apply all of my book-learned knowledge (everyone knows

that knowledge is nothing until you have to utilize it). Research became a full time job for this summer and a part time job during my upcoming senior year, and I am heading—slowly but surely—towards graduate school and a career in science. I am currently finishing the phosphate paper and we intend on publishing it as soon as possible. I truly enjoy my work right now, so at that time, I will head back to the lab--or the

marsh, for that matter--and begin the whole process again.

While I have the chance, I would like to thank my advisor for all of his time, money and advice. I appreciate it greatly.



Colin Dean (at left) and Joe Estep (right) taking samples in the salt marsh in Skidaway Island, GA

Undergrad Research Shaped My Career Path...cont'd from page 1

valuable design extension of the independent computer vision research projects I had worked on and allowed me to apply many of the concepts I had learned in my undergraduate research. Undertaking this senior design project with my group allowed us to design a completely new and interesting project, introduce creative implementation ideas, and develop solutions to the image processing problems I had been researching.

My research was rec-

ognized by a Presidential Undergraduate Research Award from the Georgia Institute of Technology, which provided funding for me to continue the research I began as a UROP in my senior year. Because of my familiarity with the background modeling software, I was asked to retarget it to an embedded platform and run experiments to study the viability of these techniques in embedded environments. The results of this experiment were published in a

peer-reviewed book chapter which I co-authored (“Embedded Real-Time Surveillance Using Multimodal Mean Background Modeling,” *Embedded Computer Vision*, Springer 2009).

This undergraduate research played a huge role in convincing me to pursue a Ph.D. in electrical engineering. I consider my participation in UROP one of my most valuable experiences during the pursuit of my undergraduate degree. Having the opportunity to be a

part of a successful research experience so early in my college education gave me the confidence to take a leadership role in my classes and continues today to help me to achieve my goals.

UROP Editors Note: Dana was honored for her outstanding abilities and achievements by being named a Google Anita Borg Scholarship Recipient for her graduate work (<http://www.google.com/intl/en/anitaborg/>).

Undergraduate Research News

Undergraduate Research Participation at Tech: A Snapshot

Georgia Tech is entering into the final formal year of the Institute's Quality Enhancement Plan (QEP) developed to enhance undergraduate education at Georgia Tech. Undergraduate Research and the International Plan were chosen as the two initiatives to be highlighted during the plan's tenure. During this time, new, unique degrees were developed and special attention given to undergraduate research.

Since inception of the QEP, participation in undergraduate research has reached 2146 enrollments, an increase of 60% since academic year 2006. Enrollments rose 18% in the 2009 academic year alone. Additionally, 42% of students graduating Georgia Tech in spring 2009 reported involvement in undergraduate research on the commence-

ment survey sponsored by the Office of Assessment. Also of interest is the increased enrollment in undergraduate research courses during summer 2009 – 462 students, the highest participation during this semester over the past 5 academic years and an increase of an additional 10% over the past summer's enrollment. (Note: Figures do not accurately report the numbers of undergraduate students who are paid as research assistants on campus since many do not enroll in the audit research courses. Many are also hired under varying job codes.)

Ideally, we hope that students participating in research will do so for more than one semester since longer-term experiences provide better in-depth knowledge and skill building within specific areas of in-

terest. Longer-term experiences also lend themselves better to student presentations and possible publications. Graduating seniors in academic year 2009 who enrolled in undergraduate research courses participated an average of 2.2 times for an average total of 6.5 hours during their tenure at Georgia Tech. Overall 59% of graduating seniors enrolled and completed at least 2 semesters of undergraduate research and 55% were enrolled in at least 4 credit hours.

The Research Option was developed as a longer-term, more intensive research experience involving at least nine hours of research completed within a framework of guidance. The option, which includes support to students from writing experts, culminates in a thesis archived in the

Georgia Tech library. The Research Option is available in 18 schools at Georgia Tech. Eight-two students have graduated with the option or completed all requirements. An additional twenty-eight plan to complete the requirements this Fall 2009.

Additional information and data for specific schools and colleges is available upon request from the UROP office. An interim impact report on the QEP's 2009 activities will also be available soon from the SACS accreditation webpage (<http://www.assessment.gatech.edu/SACS/QEP/>). The report contains additional information on enrollments, the research option, and other program activities.



Mentoring Undergraduate Researchers: Workshops for Faculty, Post-Docs, and Graduate Students

- Are you a faculty member who is currently, or will be supervising, undergraduates in a research setting?
- Are you a graduate student or post-doc who is currently or who will be working with undergraduate students in research settings?
- Did you know that “finding a good mentor” is one of the most important factors undergraduate researchers cite as helping them complete a successful project?

Come learn more about how to be a good mentor! Both veterans in undergraduate research mentoring and those new to the experience are welcome!

What Makes a Great Mentor?

Join us as we cover the “basics” of mentoring undergraduates in research in this interactive session. We’ll discuss timely tips, provide a set of key resources, and hear directly from students and experienced mentors.

Tuesday, September 29, 2009

11am-1pm

Klaus Building, Room 1116E

Lunch will be provided.

RSVP by Tuesday, September 22, 2009 at
<http://fall09mentoringworkshop.eventbrite.com/>

Undergraduate Research News

International Research: Learning Beyond the Classroom — and Tech

The Office of Undergraduate Research interviewed Emily Weigel, BIO and Georgina Schaefer, CHBE about their summer research experience in Aachen, Germany. Here's what they had to say.



U/G Research: How did you become involved in research as an undergraduate student at Georgia Tech?

EW: From the very beginning I knew I wanted to be involved in research. I began starting my second semester applying for grants and research scholarships alongside volunteering in Dr. Terry Snell's lab. By summer of my freshman year, I was doing 4 credits of research and working on my own project in ecotoxicology and behavior of rotifers. After more credits, presentations, and an Honor's Thesis sophomore year, I felt like it was time for me to test out the idea of research full-time. I had heard of all of the wonderful research opportunities in Germany, and so I started applying to Germany's top universities, RWTH Aachen and TU München, and luckily I gained research positions at both.

GS: I became involved with undergraduate research at Georgia Tech my freshman year. After meeting with my major academic advisor, Dr. Charles Eckert, and developing a good relationship with him, I was offered a research position in the Eckert and Liotta Specialty Separations Lab which is a collaboration between the Schools of Chemical & Biomolecular Engineering and Chemistry & Biochemistry. I was excited about the opportunity to explore my major more as well as the unique opportunity to work in a research environment where both chemists and chemical engineers work together. I have worked in the Eckert/Liotta lab for three semesters now; one summer full time (40hrs/week) for pay, one semester for pay, and one semester for 4 credit hours. Since I worked three consecutive semesters I was able to become very deeply involved in my research project which dealt with switchable solvent systems within the separations

field of Chemical Engineering. I worked with a graduate student who supervised my research and also met with Dr. Eckert regularly to discuss my research, experiences in the laboratory, career opportunities, and get academic advising. This research experience also allowed me to participate in an international research program through RWTH Aachen University in Germany this summer. The project I worked on dealt with switchable solvents and was an intensive look at a combination of reaction and separations. In this program I worked in an international research setting, took German language courses and cultural workshops, and participated in an Undergraduate Research Symposium at the conclusion of the program.

U/G Research: Describe your role within your professor's research and research group.

EW: In Aachen, my group was comprised of several Ph.D. candidates, a few Master's candidates, and about five Bachelor students. I had a direct mentor, Dipl.-

Biol. Hanno Zielke, who often would discuss experimental design with me and then leave me to do experiments. Since I was working with zebrafish embryos and radioactive substances, there was often a lot of 'downtime' as things grew or needed to sit, so I was free to jump in and help with any of the other experiments. Since most of the bachelor students were working on parts of one large work, working cohesively was not only a chance for me to explore and learn new things, but to be a valuable contributor to the project as well.

GS: As an undergraduate researcher I assisted a graduate student with a project she was supervising. We worked

Continued on page 9



Presenting at the MRS (Materials Research Society) Conference

by Justin Nguyen, PTFE

The MRS (Materials Research Society) Spring Conference and Symposium is an annual meeting in San Francisco, CA, that showcases the most innovative and pioneering research in modern society. This conference displays every aspect of materials engineering, including renewable energy, biodegradable, highly resilient polymers, novel metal alloys, various advanced fabrication techniques, and much more. There are also many distinguished speakers from across the globe, including several Nobel Prize laureates presenting research on density function theory and neutron scattering.

As an undergraduate, I was very overwhelmed to present at such a prestigious research conference. My research experience was extremely small (six months) compared to the hundreds of professors presenting at MRS, and I also had very little background making technical presentations. Fortunately, I had the unwavering support of my research advisor, Dr. Jud Ready, who not only encouraged me to apply to MRS, but also assured me that

my results and presentation, “Amorphous Silicon Deposited on Vertically-Aligned Carbon Nanotubes” would be warmly received at the conference. Combined with his support and my remaining doubts and fears, I made exceptional and extensive preparations for my poster presentation. I was also fortunate to obtain a travel PURA from the UROP office, which helped fund my stay and pay for meals.

When the MRS Spring Conference and Symposium finally arrived, the research and presenters in attendance absolutely captivated me. I was astounded that I could learn so much in so little time, especially about some of the most exciting and advanced research in modern society, from novel thin-film thermoelectric generators to annealing effects on new prototype solar cells. Much of the research found in science magazines and television, as well as much of yesterday’s science fiction, could be found here, at MRS. It

was truly fascinating to be in such esteemed company, and to also learn how classroom concepts were utilized to mold the future of human life, whether it was carbon fiber composites for high performance transportation, alternative biofuels as oil substitutes, or new ways to create super batteries for energy storage.

When I finally presented, I was pleasantly relieved to find out how smoothly my presentation went. As a matter of fact, my research received a variety of accolades from many viewers as it revealed a promising new way to make solar cells.

One of the most exciting aspects of attending a major research conference is the opportunity to meet many of the famous authors and scientists that are in the news and literature reviews. During MRS, I had hoped to meet Robert Street, a true guru and perhaps the “godfather” of modern technology in my field. Unfortunately, due to classes and scheduling conflicts, I was



not able to make it to San Francisco in time to catch one of his lectures. However, when I was presenting, he greeted me personally and expressed his interest in my work. I was incredibly elated to meet him and exchange contact information for the possibility of future collaboration. My experience at the MRS Spring Conference and Symposium was incredibly enlightening and enriching. I was absolutely astounded by the research and researchers present at the conference, and I am extremely grateful for the opportunity given to me by Dr. Ready and UROP. I anxiously look forward to attending again in the future.

Undergraduate Research News

Research Option...cont'd from page 2

The first course (LCC 4701: Undergraduate Research Proposal Writing) would occur early in the research process and is intended to guide undergraduate students from all disciplines through the stages of writing a proposal for their research option project and subsequent thesis. Topics include planning, research and documenta-

tion, prose style and editing, document design, ethics, abstracts, and oral presentation of the proposal. The second course (LCC 4702: Undergraduate Research Thesis Writing) is intended to guide students through the stages of writing their undergraduate theses and a final presentation. We anticipate an increase in quality of the proposals and theses

due to an increased level of support for students as they complete aspects of the program. Transition between the two sets of requirements will occur during academic year 2010. The first sequence of new courses begins in Fall 2009.

Students, advisors, and mentors are invited to an information session on the Research Option to be held

Thursday, October 8, 2009, from 11am-12noon, in the Student Center Room 301.

For additional information and questions regarding the option changes, please contact either your school's undergraduate coordinator or Dr. Karen Harwell, Director, Undergraduate Research.

Research in Music?

by Andrew Ash, CS with a minor in Music

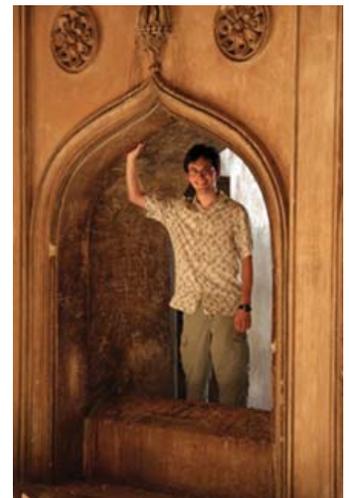
So... undergraduate research. You'll hear the phrase bandished about around Tech as if it will save your soul (and get you into grad school while you're at it). Doing research might not help you accomplish the former, but for life after undergrad it will certainly give you the experience to stand out and put all those hours in the classroom to practical use. What follows is the story of how a first-year computer science major became involved with a research project mixing

the millenia-long tradition of Indian music with modern computer technology.

My research experience started with a special topics course on Music Technology, MUSI 3450, taken with Dr. Parag Chordia. Equal-parts music analysis and music composition and focusing on currently-available technical tools, the class really opened my eyes to the type of work being done in music technology. The query-by-humming of Shazam on your iPhone? Automated playlist gen-

eration with iTunes Genius, Last.fm, and Pandora? The electronica pumping out of WREK's 40,000 Watts of EDM Sound System on Saturday nights? Those MP3s filling students' hard drives? All of these are instances of music technology making its way to practical use for consumers.

The final project of the class was a choice between creating a composition using tools such as Audacity, Max/MSP, Reason, and Ableton Live, or developing software to analyze



Andrew at Charminar in Hyderabad, India, Spring Break 2009

music using DSP and Music Information Retrieval (MIR) techniques. Of course, as a CS major I chose to write code! My project used a relatively simple technique, the Harmonic Product

Continued on page 11

 International Research..cont'd from page 6

together designing and conducting experiments, analyzing data, and making presentations and preparing papers. I also reported to my research professor on my progress and developments and collaborated with other members of the group.

U/G Research: What have you learned during your experience that goes beyond the classroom?

EW: At RWTH Aachen specifically, I really learned what it is like to work in a multicultural group and the importance of specificity and word choice when conveying information, no matter the language. I have learned several different techniques and have been able to develop my own. Most of all, having conducted research exclusively has shown me that graduate school is the right path, which is something I can't predict through classes alone. I have made some of my most valuable critics and best friends through the UROP International at RWTH Aachen. My friends there and

I have already begun a pattern of critically peer-reviewing for each other, and that is something I will surely take advantage of during my last year at Tech. On top of meeting great peers, the work I did will give me my first publication and presentation at an international level, and the professional contacts I have made have deeply influenced my post-bachelor choices. Overall, the risk to go abroad and conduct research was an extremely positive step.

GS: My research experience has given me a better idea of the different fields and career options available to me as a Chemical Engineer. The project experience I have has also made me a more competitive candidate for other research internships, future jobs, etc. It has been challenging and allowed me to apply the concepts I have learned from class in practical situations developing my skills as a scientist and a problem solver. I have also had the opportunity of working in a professional environment where I had to

report results to supervisors, collaborate with a team, give presentations, and prepare papers and posters. In addition to the scientific knowledge and professional advantages that I have gained, I have also had the opportunity of developing a close mentoring relationship with my faculty advisor who has helped advise me with classes, plan for my future career goals, and been an extremely positive and motivating influence in my Georgia Tech experience.

U/G Research: How key was your professional relationship with your mentor?

EW: My relationship in Aachen was very different than in the U.S. I would say the German "Gemütlichkeit" (hospitality) made things a little less than what I would consider completely professional, but pleasantly so; not only could I ask my mentor about possible grad school choices, but he also arranged for me to meet contacts over a lunch or beer or two. We could laugh

about German-American differences and generally enjoy each other's company, and that was absolutely key during long lab days.

GS: My professional relationship with my mentor is one of my defining experiences of Georgia Tech. Without my faculty mentor I wouldn't have had the opportunity of getting involved in undergraduate research and all of its benefits. Because of my research experience I was able to spend a summer abroad in Germany and have gained many more academic and professional advantages.

U/G Research: Have you presented your work in any forum or published a paper?

EW: I have written and presented various work I have done in Germany in German and English, and a coauthored paper and presentation will be given at SETAC-GLB (Society of Environmental Toxicol-

Undergraduate Research News

International Research..cont'd from page 9

ogy and Chemistry- German Language Branch) in October, 2009.

GS: Yes, this summer at the conclusion of my research internship in RWTH Aachen University I was required to write a scientific paper to be submitted to their journal for Undergraduate Research and to prepare a poster presentation in which I presented at the University's Undergraduate Research Symposium. In addition, I was required to make a few presentations to my research group and supervising professor regard-

ing my research results and developments.

U/G Research: What's the number one piece of advice you would give to fellow undergraduates who might be interested in research?

EW: Explore your options, and never limit yourself to the beaten path. If you know you want to do something and it's never (or hardly) been done before, take the difficulties of trailblazing in stride and enjoy yourself.

GS: Participating in undergraduate research has given me so many opportunities to further explore my major. Without my previous research experience I wouldn't have been able to participate in this research exchange program to Germany which was made possible for me by my research professor. My number one piece of advice to someone looking to get involved in undergraduate research would be to find a mentor. Find a faculty mentor who you have a connection with, someone

who is willing to invest in you and who cares about your success. After that, I would suggest emailing him/her or setting up an appointment to talk about your research interests and see what kind of projects he/she is currently working on. Read some of his/her papers and ask questions. Show that you are really interested in his/her research and that you have a passion for it. A good research professor can really help you grow in your academic career and help you find opportunities to ultimately meet your goals.

PURA

President's Undergraduate Research Award

Spring 2010 Applications due October 19



Apply for competitive \$1,500 salary awards or up to \$1000 funding to present your work at a professional conference

Visit <http://undergradresearch.gatech.edu/funding.php> for more information and application instructions.

Research in Music..cont'd from page 8

Spectrum, to do pitch tracking and detection on a one-line piano melody. Nothing can describe that magic moment where my mess of Matlab code actually plotted the notes I played in the correct pitch and time-location for the first time!

As a result of that project, I was invited back to begin work on an upcoming project in the new GT Center for Music Technology. Advised by Professor Chordia, I was awarded a PURA grant just as our research was picking up full-speed in the Spring 2009 semester. Our group is developing a Content-Based Recommendation system targeted at Indian music, similar in product to Last.fm and Pandora. Where we differ is in approach: rather than the trained music-listener

approach taken by Pandora and the social analysis done by Last.fm, our system applies DSP, statistics, and Machine Learning techniques for its recommendations and playlists.

Our group recently presented our work at the Woodruff Arts Center after a concert by Georgia Tech's contemporary music ensemble-in-residence, Sonic Generator. There I was able to discuss my contributions to the project with the general public, which center around web development for our frontend and the algorithms required for generating a playlist from our internal representation of the songs. It was an exciting experience, and one I hope to see occurring again as we make forward progress on

the project.

Closer to home was the UROP Spring Symposium put on every year. Instead of a poster, I chose to give a 20-minute oral presentation and field questions about the research. Often, it's only when preparing for a presentation that you reflect on how far your research has come and where you need to go. I'm now much more comfortable giving my elevator pitch about this research after so much time spent pulling together everything our group is doing.

Working on undergraduate research has shifted my academic focus in new directions. I'm now looking into adding the Artificial Intelligence thread onto my CS major and squeezing into my schedule a Music or Math

minor to reflect my research. I'm also working on getting into a grad-level Music Information Retrieval (MIR) class with my advising professor to continue developing the skills for research.

Sometimes students struggle finding that initial contact into doing research, and other times it just falls in their laps. I was lucky, but I find that a lot of undergraduate researchers get started just by letting the passion for things they already do shine through. For anyone even remotely considering research, I would recommend simply talking to the professors teaching classes you enjoy about any projects that they're working on. You never know when you might stumble onto something you'll love.

Upcoming Workshop Sessions

Benefits & Rewards of Undergraduate Research

August 25, 11am-12 Noon
Student Center Rm 319

Benefits & Rewards of Undergraduate Research

September 1, 4pm-5pm
Student Center Rm 319

President's Undergraduate Research Award (PURA)

September 24, 11am-12 Noon
Student Center Rm 301

Research Option Info Session

October 8, 11am-12 Noon
Student Center Rm 301

Register for these workshops by e-mailing urop@gatech.edu



Undergraduate Research Opportunities Program (UROP)

News from the Director

Welcome Back!

It seems like yesterday we were closing out the Spring semester, hosting our annual spring symposium, and hearing about student's plans for summer research. Now, we turn our eyes toward a new academic year and a new crop of activities and opportunities.

We invite you to join us or to urge you fellow students to join us for several fall events. Those interested in hearing more about the basics of undergraduate research should join us for our "Benefits and Rewards" information sessions on August 25 and September 1st. Others may be interested in hearing more about the President's Undergraduate Research Award (PURA) on September 24th or the Research Option on October 8th.

Mentors, both experienced and new, should join us for our annual Basics in Mentoring workshop on September 29th. We'll enjoy roundtable discussions and panel sessions designed to promote discussion on excellence in mentoring.

Fall is also a great time for students to become involved with our Student Advisory Board for Undergraduate Research (SABUR) and our undergraduate research journal, The Tower. SABUR's first meeting will be held September 1st at 11am and the Tower is currently looking for student members. For additional information, visit: <http://gttower.org/>

As always, our office is committed to equipping students to discover exciting research opportunities, learn about opportunities to present or publish their work, and find possible funding. We are also interested in assisting mentors (faculty and graduate students) with funding and support. Please don't hesitate to contact our office for support or with questions!

Best,
Karen Harwell, Director

Undergraduate Research Opportunities Program (UROP)
Georgia Institute of Technology
MC 0740
Atlanta, GA 30332-0740
Phone: 404-385-7325
Fax: 404-385-6940
E-mail: urop@gatech.edu
www.undergradresearch.gatech.edu

Let Your Voice Be Heard!!



Student Advisory Board for Undergraduate Research (SABUR)

The Student Advisory Board for Undergraduate Research (SABUR) works toward implementing new ideas for programs and resources for students interested in research. If you're interested in serving on this board, please email the Chair, Ramya Parthasarathy at ramyah@gatech.edu. *Freshman, sophomores, and juniors are particularly encouraged to become involved!*

WE WANT TO HEAR FROM YOU!!!!

UROP Facebook Page

Interested in hearing more about upcoming Undergraduate Research events, news, funding, etc? Then join the GT Undergraduate Research Opportunities Program (UROP) Group on Facebook.

Listserv

To receive information and announcements from Georgia Tech's Undergraduate Research Opportunities Program (UROP), join the urop-news listserv. To join: Send an e-mail to sympa@lists.gatech.edu with a subject of "subscribe urop-news".