Office of the Vice Provost for Research
and
Dean of the Graduate School

Annual Report
Fiscal Year 2010

Submitted by
Collis R. Geren

Compiled by
Dennis W. Brewer

Table of Contents

Executive Summary

Sponsored program awards received by the **Office of Research Support and Sponsored Programs** during FY10 totaled $64,266,466, representing an unprecedented increase of 31.9% over FY09. Total sponsored program awards (including the Division of Agriculture) for FY10 totaled $82,299,466, representing an overall increase of 28.4% over FY09. About 62% of this increase can be attributed to the Stimulus Bill.

The **Technology Licensing Office** negotiated seven licenses, including six to start-ups, and five of those six were in-state. One licensee, BiologcisMD, began as a Walton College business plan team that won both the Rice and Moot Corp competitions, the first time this has been accomplished.

Graduate School enrollment grew from 3356 to 3606 this year, a 7.5% increase.

Doctoral enrollment grew to an all-time high of 1110 in Fall 2009 from last fall's previous record of 1043, a 6.4% increase.

A total of 160 **doctoral degrees** were awarded during the 2008-09 academic year compared with 144 the previous year and 115 in 2006-07.

Sixty-eight **African -American doctoral students** were enrolled in Fall 2009, fourteen of these in the Public Policy program.

The *Collis R. Geren Award for Excellence in Graduate Education* was established by the **Graduate School** in honor of retiring Vice Provost for Research and Dean of the Graduate School Collis R. Geren, for his commitment to graduate education and student success.

The Office of **Graduate and International Recruitment and Admission** welcomed a cohort of ten first-year students from Rwanda as part of the Ministry of Education Presidential Scholars Program following a visit to Rwanda by Director Lynn Mosesso.

During the fiscal year 2010, there were 50 **distinguished doctoral fellows** (DDF) and 181 **doctoral academy fellows** (DAF), with 21 new students accepting the DDF in Fall 2009.

Since its inception, the **Microelectronics-Photonics** graduate programs have enrolled 180 students with a retention rate of 84%.

A **Public Policy** student received a three-year $320,000 grant from the Office of Rural Health in Washington, D.C.

Arkansas Space and Planetary Science Center faculty and students made over 60 conference presentations (oral and posters) and 16 journal publications, on work directly related to Center research and graduate degree programs.

Sixty-five students were enrolled in **Cell and Molecular Biology** graduate programs in Fall 2009 with six completing their Ph.D. degrees during the 2008-09 period.

The **Office for the Studies on Aging** developed a concentration on Aging Studies for the Ph.D. in Public Policy.

The **University of Arkansas Press** has made an agreement with *Google Search* for its entire new and back list of titles and has made another agreement with *Google Editions* for a selection of its titles to be available for sale in electronic editions.

The total value of federal and state funding during the last three years that supports operations, instrumentation, education, outreach, and training for **high performance computing** is more than $8.5M. The total value of externally funded projects that use high performance computing resources is more than $15M. The calculated Return on Investment to the state and to the University is more than 20:1.

Testing Services administered 518 sessions of standardized tests to approximately 11,000 students.

The **Survey Research Center** engaged in 37 projects during the year. The staff administered 22 surveys during the year and wrote 16 project reports.

Dr. Collis R. Geren retired as Dean of the Graduate School and Vice Provost for Research on June 30, 2010. Dr. Todd Shields became Interim Dean of the Graduate School and International Education on July 1 and Dr. Jim Rankin became Vice Provost for Research and Economic Development on July 19, 2010.

Research Support and Sponsored Programs

Proposals and Awards

Award Administration

The Office of Research Support and Sponsored Programs (RSSP) accepted a total of 535 awards from various sponsors during FY2010. Total sponsor funding received by RSSP for FY2010 is $64,266,466 representing an increase of 31.9% compared to FY2009. The Division of Agriculture accepted and/or administered research support in the amount of $18,032,980 representing an increase of 4%. As shown in Table 1, University of Arkansas external support for sponsored activities received in FY2010 was $82,299,446, an overall increase of 28.4% from the prior year.

The composition of total FY2010 awards is $53,015,057 (64.4%) from federal sources, $15,200,801 (18.5%) from state sources, and $14,083,588 (17.1%) from other sources such as industry and private foundations. These proportions reflect a greater fraction of total awards from federal sources as compared to industrial and private foundation awards. It should be noted that funds from non-governmental sources have dropped below that from state and federal government sources. This is likely due to the current economic climate.

Table 1. Historical Summary of Awards by Unit FY02-FY10

	TOTAL AWARDS								
Unit	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010
ADMIN	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 957,967	$ -
AFLS	$ 16,259,724	$ 14,629,058	$ 15,193,476	$ 17,335,331	$ 2,400,089	$ 13,686,441	$ 14,811,857	$ 19,989,692	$ 21,290,763
ARCH	$ 1,814	$ 2,046,916	$ 527,989	$ 1,433,944	$ 1,778,349	$ 1,043,038	$ 586,961	$ 855,246	$ 468,085
ARSC	$ 17,986,408	$ 14,333,548	$ 27,408,401	$ 20,634,520	$ 19,886,493	$ 17,220,638	$ 19,891,658	$ 21,308,726	$ 21,858,369
CTED	$ -	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ -
EDUC	$ 5,439,329	$ 5,302,161	$ 6,494,183	$ 5,348,988	$ 7,076,504	$ 6,368,064	$ 7,272,031	$ 7,176,954	$ 8,698,295
ENGR	$ 9,579,796	$ 7,508,027	$ 7,466,224	$ 10,399,587	$ 20,994,561	$ 10,992,697	$ 17,935,215	$ 8,755,641	$ 19,326,484
GRAD	$ -	$ 164,357	$ 176,346	$ 197,136	$ 615,541	$ 1,527,150	$ 436,831	$ 649,833	$ 3,477,614
LAW	$ -	$ 150,904	$ 222,180	$ 39,744	$ 46,510	$ 117,853	$ 89,529	$ 11,000	$ 39,744
LIBR	$ -	$ 28,000	$ -	$ 30,000	$ -	$ -	$ -	$ -	$ -
VCAA	$ 129,225	$ -	$ -	$ 355,000	$ 1,028,362	$ 43,418	$ 70,000	$ 700	$ 51,516
VCFA	$ 1,424,638	$ 35,864	$ 823,730	$ 1,010,333	$ 1,736,322	$ 3,114,851	$ 1,578,067	$ 1,386,081	$ 3,569,906
VCSA	$ 1,516,940	$ 3,313,565	$ 2,822,405	$ 1,682,489	$ 2,876,985	$ 1,959,914	$ 2,482,727	$ 1,803,320	$ 2,900,192
WCOB	$ 258,977	$ 838,162	$ 1,549,525	$ 1,135,109	$ 775,381	$ 1,501,740	$ 918,644	$ 1,197,457	$ 618,478
Total	**$ 52,596,851**	**$ 48,350,562**	**$ 62,684,459**	**$ 59,602,181**	**$ 59,215,097**	**$ 57,575,804**	**$ 66,173,520**	**$ 64,092,617**	**$ 82,299,446**

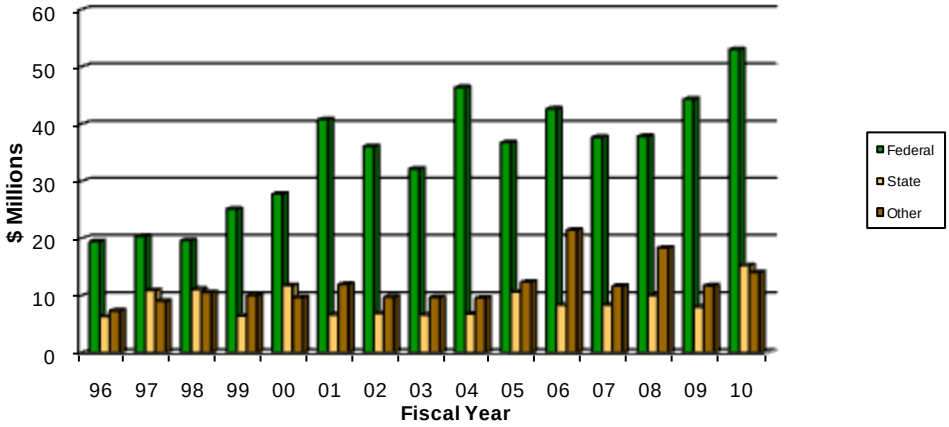
Table 2. Summary of Awards by Funding Source

Combined RSSP & AFLS				
Unit	Federal	State	Other	
ADMIN	$ -	$ -	$ -	**$ -**
AFLS	$ 11,512,784	$ 211,678	$ 9,566,301	**$ 21,290,763**
ARCH	$ 75,806	$ 392,279	$ -	**$ 468,085**
ARSC	$ 15,674,377	$ 5,066,692	$ 1,117,300	**$ 21,858,369**
CTED	$ -	$ -	$ -	**$ -**
EDUC	$ 3,134,722	$ 4,080,747	$ 1,482,826	**$ 8,698,295**
ENGR	$ 14,595,283	$ 3,349,550	$ 1,381,651	**$ 19,326,484**
GRAD	$ 2,192,594	$ 1,205,140	$ 79,880	**$ 3,477,614**
LAW	$ -	$ 39,744	$ -	**$ 39,744**
LIBR	$ -	$ -	$ -	**$ -**
VCAA	$ 40,000	$ 11,516	$ -	**$ 51,516**
VCFA	$ 2,782,299	$ 787,607	$ -	**$ 3,569,906**
VCSA	$ 2,900,192	$ -	$ -	**$ 2,900,192**
WCOB	$ 107,000	$ 55,848	$ 455,630	**$ 618,478**
	$ 53,015,057	**$ 15,200,801**	**$ 14,083,588**	**$ 82,299,446**

American Recovery and Reinvestment Act of 2009 (ARRA)

The University received $11,432,073 in sponsored project funding from a federal source or as a subrecipient of a PRIME ARRA recipient. (Total ARRA funding received by the University as of June 30, 2010 is $20,426, 270.) ARRA funds represent approximately 62% of the total increase in sponsored funding realized by the University and the Division of Agriculture in FY2010.

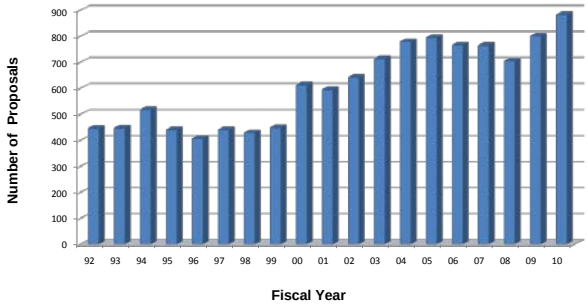
Figure 1. Award Trends by Source



Proposal Development and Submission

RSSP assisted with the development and submission of 882 proposals and requests for continuation, exclusive of requests for no-cost extensions, in FY2010. The number of proposal submissions to all sources increased by 10.3% over the previous fiscal year. Total funds requested were $412,870,653. This includes requests of $388,162,169 (94%) for federal funding, $15,527,793 (3.8%) for state funding and $9,180,691 (2.2%) for other types of funding. Figure 1 illustrates the history of submissions from FY1992 through the current fiscal period.

Figure 2—Proposal Submissions by Fiscal Year



RSSP Highlights for FY2010

Research Administrators Post (RAP)

RSSP has been severely understaffed for a number of years. In April of 2009, RSSP organized a University-wide group of administrators who wish to improve their understanding and assist investigators/ program managers to comply with of the rules, regulations, policies and procedures which govern the administration of sponsored activities. The purpose of the group is

to standardize practices and procedures and improve services to investigators/programs directors. All members are volunteers. Meetings are held monthly and attendance varies. At the present time, RAP has 141members. Attendance varies but ranges from 40 to 60 attendees per meeting.

Meeting topics are selected based on member needs, requests, and current issues. In addition to discussing compliance issues, the group attempts to identify areas of common concern and/or frustration and improve the processes which hinder the effective and efficient administration of sponsored projects. Topics covered in the past year are included at the end of this section of this report.

Using the materials prepared for the monthly RAP presentations/training, the group has begun to draft a "Research Administrator's Handbook" which is a primary goal of the group. Also to be created are "Preaward (Proposal) Management" and "Award Negotiation and Acceptance." From the Administrator's Handbook the group hopes further to create a handbook for investigators/program managers to assist them with proposal creation and submission, post award management, and project closeout.

RSSP Compliance

RSSP has primary responsibility for facilitating investigator compliance with regulations and policies governing research which includes human subjects and/or live vertebrate animals. RSSP maintains all records and correspondence, arranges protocol submissions and distribution, schedules meetings, and generally supports the committees and their members who conduct the primary review, approval, and continuing review of these activities.

Institutional Review Board (IRB)

The IRB continues to be the busiest compliance committee on campus. Investigators submitted 702 new protocols and protocol revisions and extensions for review and approval. The IRB found that it needed to modify the draft of the new policy and procedures manual which will be submitted for institutional review and approval. With the implementation of the new policy and procedures, many projects will no longer require submission to the IRB for approval or exemption. These changes will not affect the University's ability to comply with federal regulations and will decrease the time needed for project approval. In addition, the IRB now offers on-line training for investigators through the Collaborative Institutional Training Initiative (CITI). CITI, a collaborative effort between research institutions and the federal government, is a subscription service providing compliance education to all members of the research community whose institutions are affiliated with CITI. (CITI also provides instruction in responsible conduct of research.) Training is provided at no cost to all individuals wishing to enroll.

Institutional Animal Care and Use Committee (IACUC)

The number of protocols and protocol modifications for review by IACUC remained relatively steady when compared to last year. Dr. John Hahn, IACUC Veterinarian, was called upon to provide increased support and assistance due to the increased diversity of procedures employed by researchers. The IACUC membership has been enlarged to include a member of the faculty from the College of Engineering to ensure representation of all units which engage significantly in vertebrate animal research. In addition, a new, temporary facility has been approved for Dr.

David Zaharoff, Biological and Agricultural Engineering, in his laboratory at the Engineering Research Center.

The IACUC completed all semi-annual facility reviews on time. There were no findings of significant non-compliance noted at any facility. The Director of RSSP successfully negotiated the renewal of the Office of Laboratory Animal Welfare Assurance. The new expiration date is 28 February 2014. In accordance with the terms of the Assurance, continuing education and training specific to IACUC functions and federal regulations will be provided for all IACUC members.

Biological Safety, Radiation Safety, and Toxic Substances Committees

While Environmental Health and Safety, Facilities Management, has primary compliance responsibility, RSSP also provides administrative support for the Biological Safety, Radiation Safety, and Toxic Substances Committees. The Biological Safety and Toxic Substances Committees collaborated to create Standard Operating Procedures (SOP) for research activities involving the creation or use of nanoparticles/materials. It is anticipated that this SOP will need to be revised frequently to accommodate the growing body of knowledge about the biological hazards of nanoparticles, especially those conjugated to heavy metals or chemotherapeutic agents used to target human illness. The Radiation Safety Committee has been actively engaged in the renewal of the University's license for the use of isotopes and equipment containing sealed sources of ionizing radiation. The Arkansas Department of Health is expected to issue a broadscope license within the next two months. RSSP staff members are responsible for arranging meetings, managing committee appointments, collecting and distributing protocols and meeting materials as required, and handling routine correspondence. Of these three committees, only the Biological Safety Committee has seen a significant increase in submissions.

Responsible Conduct of Research

Primary responsibility for investigating allegations of research misconduct lies with the Research Council. RSSP provides administrative support for the Council by arranging meetings, distributing materials, etc. In addition, the Director of RSSP is a regular presenter for the Graduate Professional Learning Series, a program initiated by the Graduate School to provide graduate students with training in research responsibility. A three-course series is available in every Fall semester. Students who complete the prescribed courses are presented with a certification of completion.

Export Control

The number of research activities, externally and internally funded, which involve technology controlled by federal regulations continues to increase. With the assistance of the Office of Technology Licensing (OTL), RSSP provides training and assistance in identifying controlled activities for faculty, staff, and students. Training is available in a group setting or individually as appropriate to the situation. In the event that the investigator, with the assistance of OTL and RSSP, cannot definitively determine control status and classification, RSSP refers projects to the Office of General Counsel for review by one of two external legal firms retained to provide assistance. Once controls and controlled technology have been appropriately identified, RSSP reviews and approves all technology control plans submitted by investigators and maintains all records and certifications of security.

Information Technology

Due to lack of funds, RSSP has not been able implement database software which allows the internal routing and approval of proposals and research protocols. However, with the assistance of the BASIS Team, RSSP has initiated automatic alerts to remind Principal Investigators/Project Directors (PI/PD) that cost centers are approaching the expiration date. Reminders are sent to the PI/PD, responsible Research Accountant, Departmental Contact, and RSSP Postaward Administrator at 90, 60, and 30 days prior to cost center expiration.

Research Services

Central Laboratory Animal Facility

The Central Laboratory Animal Facility (CLAF), an area of approximately 9,000 sq. ft. located in the basement of the "A" wing of the Animal Sciences Building (AFLS), has been in operation since early 2000. During Fiscal Year 2010 (FY10), of the 13 rooms that can potentially house animals (primarily small rodents and rabbits), 6 were in continuous use, 2 rooms occupied intermittently, and 1 additional room used for experimental procedures (exercise training on a treadmill). There were eight investigators who were the primary users during FY10, four of whom use mice and four of whom use rats.

The investigators were charged a *per diem* rate for the care of their animals. A total of $24,762 in *per diem* charges was collected for the FY10 accounting period. Income from the CLAF users decreased approximately 28.5% from the previous year. This was due primarily to the fact that the several large rat studies conducted during FY09 ended early in FY10 and studies of similar size have not subsequently been initiated. This fiscal year, the revenues charges completely covered direct costs (feed, bedding, cage-cleaning chemicals, supplies, routine maintenance and repair to equipment, and one-half of the Veterinarian's wages). *The $2,976 starting maintenance budget was not counted as income and the costs incurred by the LATA training program were not counted as direct costs of animal care.* Also, the salaries of the Facility Manager and the Veterinarian are not, and have never been, included as a cost to be recovered by current *per diem* rates.

The CLAF Facility Manager has been the sole source of animal husbandry/care this fiscal year. This situation needs to be remedied since RSSP has no back-up personnel to cover in the event of illness or annual leave. Fortunately, the workload was light enough that the Manager could arrange time off without jeopardizing the animals housed in the facility. It anticipated that research activities will continue to increase. RSSP will investigate the need to increase the per diem rates to cover the costs of at least one additional part-time animal care giver. (*Per diem* rates have not been increased since the CLAF was put into operation at the beginning of 2000.)

Glass Blowing and Machine Shops

Both the Glass and Machine Shops served a variety of departments and students. These shops provided services to seventeen UA departments, three universities (in addition to UA) and four private businesses during FY10. Both shops are experiencing significant requests for instructing students, on a one-to-one basis, in the use of various, common machines, *e.g.*, drill presses and polishers, available in the shops. No charge is made for instruction of students.

- *Machine Shop*

Highlights of Dennis Rogers' efforts include the following projects:

- Dr. Frank Millett, Chemistry & Biochemistry: Fabricated custom parts for HPLC pump for which commercial parts are no longer available eliminating the need to replace the HPLC with a new one
- Dr. Fant, Industrial Engineering: Built frame for solar panels to use for instructing students regarding variables in the construction and installation of solar panels.
- Civil Engineering Students: Fabricate the bridge designed by Engineering students for entry in the A.S.C.E Steel Bridge and Concrete competition.
- Genesis Technology, Space Photonics: Worked with John Vickers to design and build cylinders to focus lasers, housings to hold lasers and all working parts, and also adjustable mounts to enable accurate information transfer from laser to laser.

- *Glassblowing Shop*

Highlights of John Pace's efforts include the following projects:

- Dr. McIntosh, Chemistry & Biochemistry: The McIntosh Lab is the primary on-campus user of Glass Shop services. On a monthly basis, the McIntosh research team requested repairs to various pieces of glassware as well as the fabrication of new manifolds and other assorted accessories.
- Dr. Teng, Geology: Fabricated several varieties of specialized, volumetric columns which are either not available commercially or for which commercial costs are greater than the available funding.
- Dr. Ya-Jane Wang, Food Science: Repaired and serviced a specialized older model of a RapidStill that is no longer in production eliminating the need to purchase a new still.
- N-N Laboratories, a Genesis company: Helped design and fabricate several prototype half sphere vessels with an optical quality window for radiating a nanofluid.

Advice and general assistance are provided gratis to faculty and students. These shops provide services to both external and internal clients at an hourly rate (labor) plus associated shipping and materials charges. The Glass Shop saw an increase in revenues of 26%. The Machine Shop's labor income was up slightly up this year but fewer materials and supplies were needed to provide services. This resulted in a decrease in revenues of 21%. Overall there was a unit increase of 5% in total recharge/billing to clients from FY09.

Shop	Jobs	Shipping and Materials	Labor	Total Income	Change from FY09
Glass Shop	92	$4,039	$12,274	$16,314	+26%
Machine Shop	37	$770	$7,727	$8,497	-21%
Total	129	$4,809	$20,002	$24,811	+5%

Research Administrators Post (RAP) Presentations
2009-2010

Biosafety, Radiation Safety & Toxic Substances
Budget Revisions

Cost Share 101
Effort Certification
Electronic Proposal Routing/Sharepoint
Export Control Policies & Procedures Student Undergraduate Research Program
Fellowship/Stipend/Tuition Awards
Funding Cost Share Cost Centers
Indirect Costs 101
IRB and IACUC
Managing Stimulus Funds (ARRA)
Preparing for an Audit
Processing Summer Research Salaries & Fringes
Required Reporting for ARRA Awards
Subcontracts, Consultants & Vendors
Understanding Time & Effort Reporting

RAP Sharepoint Site: https://sharepoint.uark.edu/sites/RSSP/UART/default.aspx
To join the group, contract Mark Larmoyeux, marksl@uark.edu, 575-3845.

Technology Licensing Office

Executive Summary

The Technology Licensing Office takes into account two issues when deciding what to do with an invention:

(1) Is the technology protectable? and

(2) Can we find a route to getting the technology into the world?

and we have a third issue once a technology is licensed:

(3) What can we do to help move our technology from the University's shelves to the world?

We balance these issues with a fourth consideration:

> (4) How will our actions impact our clients, which are (per Board of Trustees Policy 210.1) the University, the State of Arkansas, and the inventors themselves?

Recent statistics suggest that we compare well with our peers. The most recent Association of University Technology Managers (based on FY2008 data) report found that UAF was relatively low in research expenditures, 42nd in federal research expenditures and 40th in industrial research expenditures amongst the 64 participating universities without medical schools. Despite this, UAF was:

- 17th in licensing deals to start-up companies in FY2008
- 16th in cumulative start-up companies still active
- 31st in licensing deals generating income.
- 29th in licensing deals generating royalties.

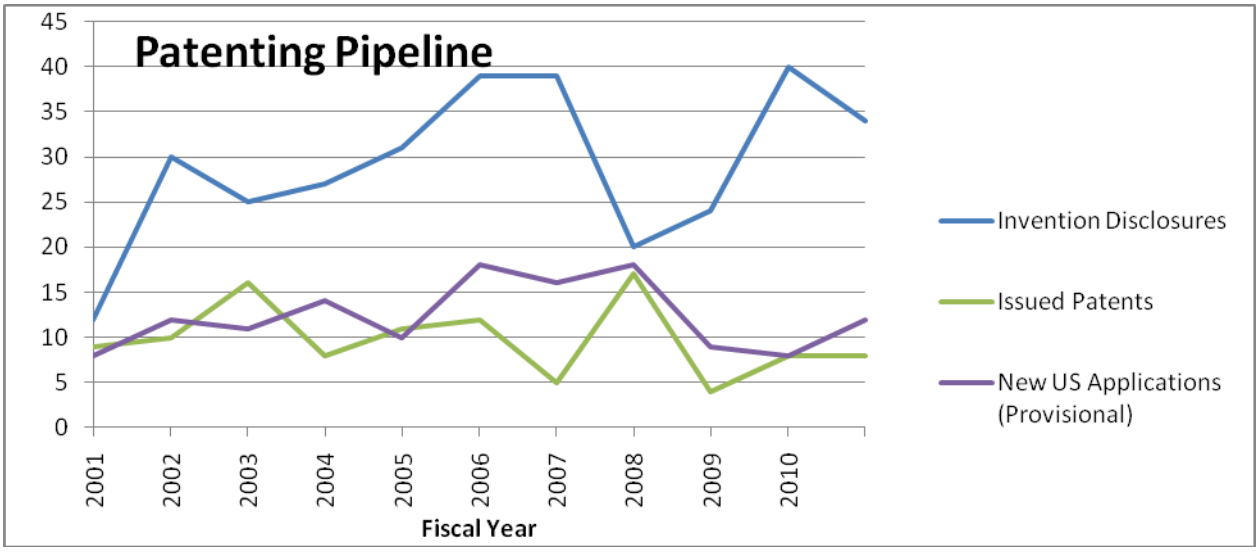
- 35th in number of licenses of any sort (e.g., large, small, or start-up company, exclusive or non-exclusive)
- 25th in number of options of any sort
- 31st in amount of running royalties
- 19th in amount of legal fees reimbursed (total dollars – **not** percent reimbursed)

Our licensing officers have worked on a variety of paths to commercialization, including the Walton College MBA business plans, tight relationships with Innovate Arkansas, and the traditional method of identifying potential targets and working with them.

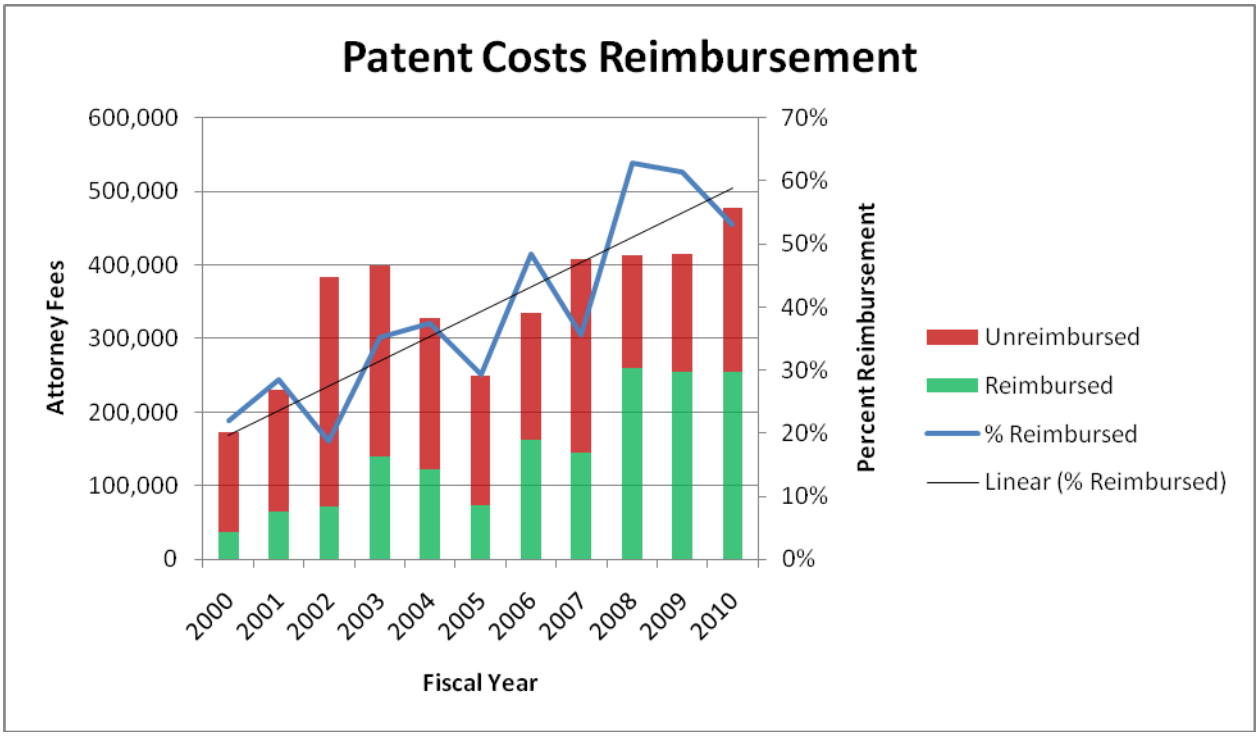
In other activities which help move our University's ideas along the path to use in the world, we taught seminars, guest lectured, responded to the White House's Office for Science and Technology Policy's Commercialization of University Research Request for Information, participated in a statewide response to a federal funding opportunity from the Economic Development Administration, and otherwise increased our visibility on campus, in Arkansas, and elsewhere.

1. **Is it patentable?**

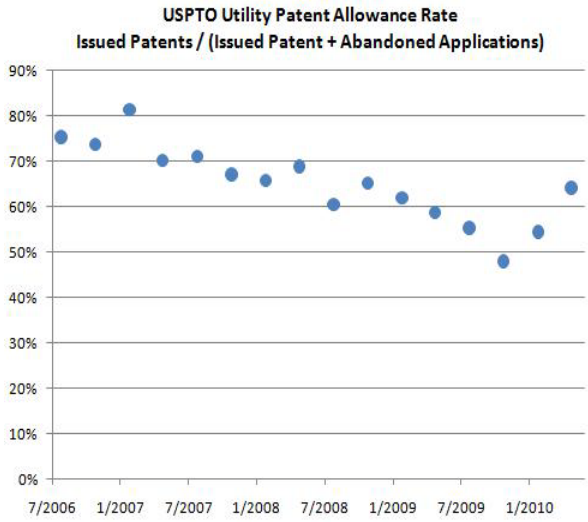
On the invention side of the column, as can be seen from the figure below, we had a year that was similar to FY2008. We received 34 disclosures of inventions or copyrightable works, filed 12 new patent applications, and had 8 patents issue.



As seen below, while our *percent* of reimbursed costs turned downward (due to additional royalty revenue being available), the absolute dollars reimbursed by our licensees is steady at about $250,000/year. Thus, we are continuing to pursue inventions that are commercially interesting. That said, we were surprised to learn, after FY2010 closed, that the Treasurer's Office identified some of our outstanding invoices from previous years as bad debt (approximately $48,000), leaving our bottom line, while not negative, less positive than we had hoped. At this writing, we are working with our licensees to get these invoices paid, and are cautiously optimistic that most of them will be paid off shortly.



We continue to keep a close eye on Patent Office trends, court cases, and Congressional activity.



As seen in the graph (at right), the US patent allowance rate has begun to turn upwards in the last six months when compared to the previous five years.[1] While that is good news, the allowance rate is still well below historical levels and we still have to exert more effort and time to obtain each patent. As the federal government's FY09 closed, the average time to first office action from utility application filing date is now 25.8 months (down slightly from 26.9 months last year).[2] From filing of a provisional patent application to issuance of a patent is now taking nearly five years.[3] We are still adjusting to current Patent Office practice, authorizing more attorney interviews and waiting patiently for first office actions. To better focus on applications likely to be patentable, we continue to seek early patentability opinions.

The Supreme Court recently decided *Bilski v. Kappos* (Supreme Court 2010)(08-964), holding (in a split decision) that business method patents are not *per se* unpatentable under 35 U.S.C. §

[1] Dennis Crouch, Patently-O available at http://www.patentlyo.com/patent/2010/05/uspto-rising-allowance-rate.html.
[2] http://www.uspto.gov/patents/stats/patentpendency.jsp.
[3] Dennis Crouch, Patently-O available at http://www.patentlyo.com/patent/2010/07/updated-statistics-patent-application-pendency.html.

101. While this specific holding does not impact our patent portfolio because we have not generally pursued business method or software patents, we had been concerned that an adverse decision would impact patentability of methods of diagnosis or treatment of disease or other biological methods.

Of more immediate impact is the recent holding by a federal district court in New York that patents to human genes are not statutory subject matter because they are the "physical embodiment of genetic information" in *Association for Molecular Biology v. U.S. Patent and Trademark Office* (also referred to as *Myriad*). This case has been appealed to the Federal Circuit, the appellate court having exclusive jurisdiction for patent cases. If the decision were upheld, it could adversely impact patent protection for genetic diagnostics and many other biotechnological advances. We are keeping a close eye on the appeal, and consult with our outside patent counsel as we pursue patents in this area.

Congress has been relatively silent this last year. Although we continue to hear suggestions of pending legislation of questionable utility, none has been enacted.

2. Can we find a way to get others to use our inventions?

We work to balance our marketing efforts among many potentially high-return inventions, attempting to properly and timely market all our inventions. Thus, like our early patentability searches, our team has focused on marketing earlier in the process. Testing the waters as to whether an invention has a ready market makes it easier to decide whether or how much to spend on a patent application. Although it would be quicker to obtain marketability analyses from third-party vendors, our budget doesn't have that flexibility at present. Thus, besides doing it ourselves, we have also begun dipping our toes in the waters of grant applications in an effort to obtain additional funds.

Our office negotiated seven licenses, including six to start-ups, and five of those six were in-state.

We licensed **VSSB Medical Nanotechnology** a system for remote monitoring and assessment of neurological and physiological disorders. VSSB's CEO is Dr. Bami Bastani, a UA alumnus and former president and CEO of Anadigics, a publicly traded supplier of semiconductor radio frequency integrated circuits for wireless and broadband communications markets.

We also licensed rights in an osteoporosis pharmaceutical that was developed by Joshua Sakon of our University, Osamu Matsushita and Rob Gensure, then of of Kitasato University and Ochsner Hospital in New Orleans, respectively, to **BiologicsMD, LLC**. This start-up was formed in conjunction with Virtual Incubation Company and began as a Walton College business plan competition team. BiologicsMD won both the Rice and Moot Corp competitions (probably two of the three most respected business plan competitions in the world), the first team ever to accomplish this in the world. BiologicsMD has made great strides toward the initial commercialization required to bring a single dose treatment for osteoporosis to market. We understand that they have in the process of negotiating funding commitments for over $650,000. Given the right partners and favorable clinical trials, this therapeutic has a real chance to be a multi-billion dollar blockbuster, the first in Arkansas' research history, and a life-changer for women across the world.

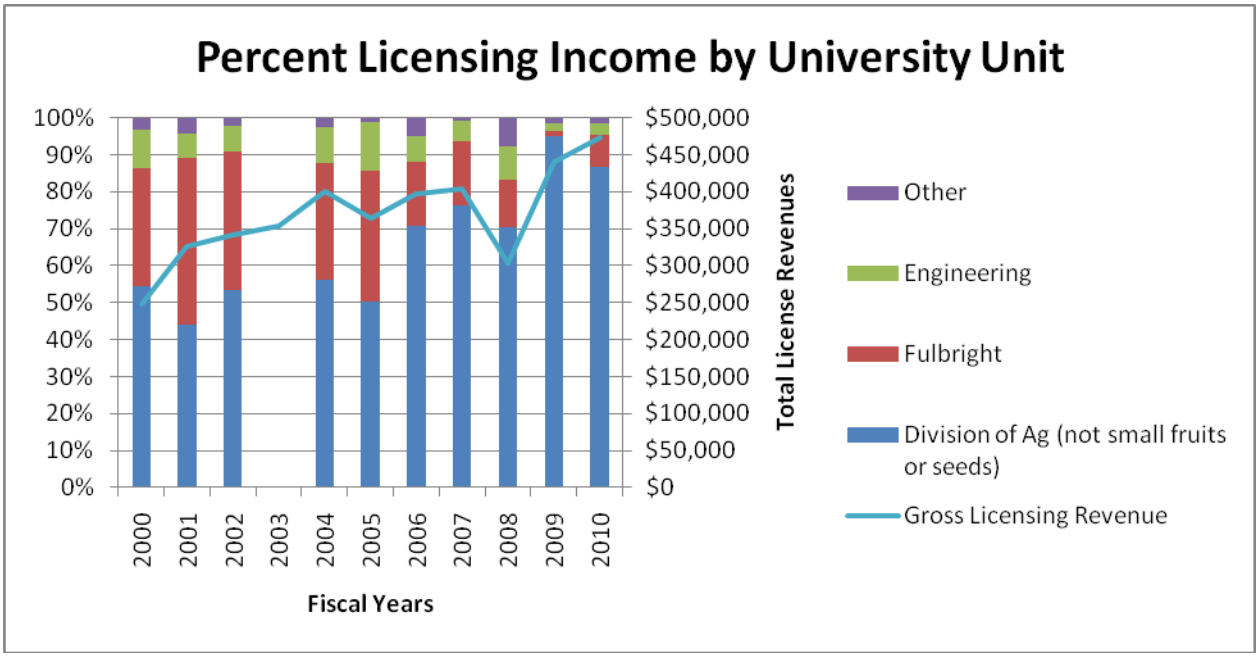
We also completed a license with **Silicon Solar Solutions** (a WCOB team that held an option to UA solar cell technologies last year). Silicon Solar continued to compete this year, and has already raised $400,000.

We licensed know-how to **EPC Global Compliance** relating to electronic product code compliance.

We completed a know-how license with **ChainOpt**, an Austin company that plans to provide services to companies in optimizing resource utilization. We also licensed patented technology for edible film to **GFE Innovations** (a California company) and a patented fescue endophyte to **DLF International Seeds** (an Oregon company).

We executed five options, four to Virtual Incubation Company and one to a WCOB team.

As can be seen in the graph below, the Division of Agriculture continues the trend of generating most of the licensing revenue that flows through our office. About 13% of the revenue came from other units this year, up from 5% for FY2008. Absolute revenue increased by about $25,000: the units other than Division saw their revenue increase 2.8-fold, while Division revenue decreased about 2%.



More than 90% of Division's revenue reported by our office continues to come from two inventions. One of these has some patents with approximately seven to twelve years of patent term remaining, and the other's patents will begin to expire in three years. Thus, our office continues to work on diversifying the University's portfolio of revenue-generating inventions.

We have not reported the revenue stream generated by licenses for small fruits or seeds because the revenue does not come through our office. (Dr. Clark did provide small fruits information for our FY2009 Association of University Technology Managers report.) However, Dr. McKinney spends a good portion of his time working on small fruits licenses, and was instrumental in closing three significant licenses and many smaller licenses and breeding and testing agreements for small fruits this year.

3. How can we help an interested company stay interested?

We continue to work with our existing licensees and other University affiliates to help them move forward. For example, we facilitated Soy Pectin LLC's $50,000 ASTA award. In a new experience for our office, we worked with NSF to obtain a release under Bayh-Dole so that our licensee NN Labs could sublicense to a Chinese company and have permission from the federal government to manufacture in China. Assuming that the deal is consummated, we expect a significant payment to the University in FY2011.

4. What are we doing for the University?

We work with faculty, students, and staff to help them learn about what our office does and about patents and other forms of intellectual property. This work takes several forms, including: guest lectures and seminars to over 100 students in four courses; an export control seminar for Division unit heads; support work and mentoring of student business plan teams; and supervising an engineering intern in creating a start-up handbook specifically directed to resources available for Arkansas companies.

We are excited about how our collaboration with WCOB is paying off with opportunities for students to stay in-state and create high-paying, high-tech jobs. This year, besides the Biologics MD and Silicon Solar Solution successes based on UA technologies, members of our office worked with InnerVision and several undergraduate business plan teams. We now want to focus on identifying and validating the very best technologies for these students. To do this, we are actively seeking ways, including submission of grant proposals, to ease the friction points of patent costs, marketability assessments, and lack of very-early-stage validation funds to make it easier for the talented would-be entrepreneurs to stay the course.

We recently submitted a statewide application for an innovation competition administered by the Economic Development Administration (EDA) of the U.S. Department of Commerce, which will award up to $1M for the most innovative ideas to drive technology commercialization and entrepreneurship in their regions. (In our case, the region is Arkansas, Texas, Louisiana, Oklahoma, and New Mexico.) Arkansas ECF, AEDC, UAMS, UALR, and UAF submitted this statewide application with the hope of obtaining funds to alleviate some of the stress points of moving very early stage innovation downstream into products to help grow Arkansas' knowledge-based economy. If the proposal is awarded, the EDA will award one million dollars, matched by one million dollars in-state, for funding patent costs, market studies, mini-seed grants to advance technologies before they are licensed, and travel funds to help business plan competitors and SBIR applicants. This was a new experience for the TLO, as none of us have ever submitted a grant proposal before. We plan to identify other opportunities in the future.

We responded to the White House's Office for Science and Technology Policy's Commercialization of University Research Request for Information.

Internally, we have transitioned to using Inteum, a relational information management system that helps technology transfer professionals manage information. Although we are not yet turning to it exclusively of our other resources, it has lived up to its promise of being much more intuitive and easier to use than our previous system. Our primary regret is that we have had to use hosted software, so the response time is much slower.

Jeff Amerine of our office taught three Early Stage Venture Finance Seminars for ASBTDC and UAFS/IEC (at no charge), and coached (in his guise as adjunct faculty) the undergraduate

Interactive Convenience Electronics team to 2nd Place in the DWR Governor's Cup. He also taught a section of Entrepreneurship and New Venture Development for the WCOB, which resulted in 3 DWR Governor's Cup participants and helped create 4 new startup businesses in Arkansas. He completed his master's degree in operations management this spring, and has begun a doctorate program in workforce education.

Dr. Childs was invited to attend the April 2010 Board of Trustees meeting, at which three licenses from our office were approved. The Board asked several general questions about technology transfer and its impact on the University as a whole. As a result, our office has been tasked with coordinating with the University's other technology transfer officers to report more details about patents, technology licensing, and how it benefits the University at a later meeting.

Most of our office attended the regional AUTM meeting in Madison in July 2009, although budget restrictions meant that we could not attend the Memphis meeting in July 2010. Also due to budget restrictions, Childs completed her continuing legal education coursework online this year.

Looking forward, the Division of Agriculture has authorized hiring of a second technology licensing officer, and we are nearing the end of the interview process. This 2nd hire was made necessary by Nathan McKinney's additional Division duties in coordinating USDA's Agriculture and Food Research Initiative (AFRI) Competitive Grants Program, and we are looking forward to additional staff on the Division side. We are also looking forward to Dr. Jim Rankin joining the Fayetteville campus as the Vice Provost for Research and Economic Development , and we are watching with interest the search for the Vice President for the Division of Agriculture.

Graduate School

Significant Achievements and Changes

Dean Geren retired effective July 1, 2010 and was replaced by two people; Todd Shields is the new Interim Dean of the Graduate School and International Education, and James Rankin is the new Vice Provost for Research and Economic Development. Note that each of these positions carries a new title and that the two offices will no longer be combined. We say good-bye to Dean Geren and wish him a very prosperous retirement.

Other activities and events of note include the following:

- In mid-September, 2009, the offices of Graduate and International Recruitment, Admissions, Sponsored Student Programs, and Graduate Fellowships relocated to Stone House North;
- The Office of Graduate and International Recruitment and Admissions hosted the first annual Graduate School Appreciation Cookout and open house, at which we honored three people with the first-ever *Collis R. Geren Award for Excellence in Graduate Education*. It seemed only fitting that the first of these awards was given to Dean Geren himself. In addition, we honored Ms. Nancy Sloan (Operations Management) with the UA staff award and Dr. Scott Mason (Industrial Engineering) with the UA faculty award;
- This Office also hosted an International Transfer Student Open House for prospective students from Tulsa Community College and Northwest Arkansas Community College in February, 2010, coordinated by Dylan Presley;

- We hosted 30 students from 11 institutions for the summer 2010 George Washington Carver program and increased the number of Carver institutions to 28 with the addition of Norfolk State University; Kendra Smith is the organizer of the Carver project;
- We selected the inaugural group of nine Graduate Student Ambassadors, who helped with various recruitment events;
- In March, 2010, we presented the Graduate Research Opportunities Forum for faculty and administrators from Norfolk State University, Mississippi Valley State University, University of Arkansas at Pine Bluff, Fort Valley State University and Mississippi State University; this was coordinated by Shani Farr;
- With the Black Graduate Students Association, we hosted the 2010 Attracting Intelligent Minds Conference in February, 2010, which was attended by 11 students representing nine institutions;
- We hosted two open houses for prospective students at the Stone House, one in December 2009 and one in April 2010; Shani Farr and Michael Rau were the primary organizers for these events;
- We hosted the Tsunami Relief Fund Project – Fulbright Scholars Leadership Conference in Little Rock; this event rotates between the U of A and Texas A & M college, and was coordinated by Gloria Flores;
- We welcomed a cohort of ten undergraduate Rwandan new freshmen as part of the Ministry of Education Presidential Scholars Program; this followed a visit to Rwanda by Lynn Mosesso, as part of a delegation consisting of faculty and administrators from the U of A, Hendrix University, and the University of Arkansas at Little Rock;
- The Teaching Assistant Effectiveness Advisory Committee of the Graduate Council, led by Diane Cook, offered three workshops for teaching assistants and hosted a luncheon for TA supervisors;
- We offered a series of lunch presentations in the Spring 2010 semester for graduate students. Besides a question/answer period with the Associate Dean, where students could ask any question they wanted, we offered a presentation by a faculty member on a topic of interest;
- Along with the Provost and the Career Services Center, we again co-hosted the "Abstract to Contract" student research paper competition. Sixty one students presented at this year's event;
- We continued efforts related to the Doctoral Completion project, in conjunction with the Council of Graduate Schools; in particular we hosted a day-long seminar on grant proposal development, which was well received by doctoral students;
- We again presented the Graduate Student Professional Learning Series, to teach about the responsible conduct of research; 312 students attended one or more of the sessions and 74 students attended all three;
- During the 2009-10 academic year, the Director of Program Assessment, Bill Warnock, conducted three program reviews and participated in a review directed by the U of A Division of Agriculture; he also co-chaired an effort to address the Higher Learning Commission's concern that the University Core criteria needs to be updated;
- Diane Cook planned and the Graduate Dean's Student Advisory Board hosted the graduate student family picnic, held for the third time in the early fall semester of 2009;
- We hosted graduation recognition lunches/dinners for the sponsored students finishing their degrees; this is coordinated by Gloria Flores and Catherine Cunningham. The number of sponsored students on our campus rose from 99 students in Fall 2008 to 137 in Fall 2009;

- Staff changes included the following: Vicky Hartwell, Director of Fellowships, added the responsibility of Associate Director of Recruitment; Michael Rau moved to the Office of Admissions and Recruitment, and Sedivy Reigh took over as office manager; Thuy Nguyen was hired as a domestic admissions analyst to replace Sedivy; Chris Serio was hired to replace Mindy Schmohl as the Operations Management admissions analyst; Beverly Lackey was hired to replace Laura Glass as a domestic admissions analyst;
- Michael Rau and Sedivy Reigh participated in the 10-week supervisor training program offered by the Office of Human Resources.

Progress and Accomplishments

Applications, Admissions, and Recruitment

Please see the separate annual reports for the Office of Graduate and International Recruitment and Admissions, and Sponsored Students; the George Washington Carver Research Program; and the Director of Graduate Student Activities.

Enrollment and Graduation

The Graduate School has the following goals:

- ✓ Increase over-all graduate enrollment each year
- ✓ Increase doctoral enrollment each year
- ✓ Increase graduate enrollment each year among underrepresented minorities, and at least reach an enrollment and graduation rate that mirrors the population of the State who are eligible to enter graduate programs (i.e. those who hold at least a baccalaureate degree). Our target enrollment and graduation rates are: African American, 8.0%; Asian American, 1.4%, Hispanic American, 1.0%; and Native American/Alaskan Native, 0.5%
- ✓ Maintain diversity in graduate enrollment by gender and nationality
- ✓ Increase graduate degree production each year
- ✓ Increase the degree production of underrepresented minorities (see goals above)
- ✓ Maintain diversity in degree production by gender and nationality

Enrollment

Graduate School enrollment, by level, is given in Table 1, master's and doctoral enrollment, by race/ethnicity, are given in Tables 2 and 3; master's and doctoral enrollment by gender are given in Tables 4 and 5; and master's and doctoral enrollment by nationality are given in Tables 6 and 7. (Tables may be found in the Appendix.)

Total graduate enrollment increased steadily from Fall 2004 to Fall 2009, in absolute numbers and, with the exception of Fall 2008, in the percentage of total University enrollment. While the percentage of total University enrollment fell slightly in Fall 2008, it rebounded in Fall 2009, with the addition of 250 more graduate students, spread across all categories except specialist students. (The 7.45% increase in graduate enrollment was the largest in these years, Fall 2004-Fall 2009.) Master's and doctoral enrollment generally increased each year, although each saw one year of decreased enrollments (Fall 2006 for master's programs and Fall 2007 for doctoral

programs), reaching a six-year high enrollment in Fall 2009 for both master's and doctoral students. See Table 1 in the Appendix.

In master's programs, we have met our goal of enrolling at least 8% African American students every year since (and including) Fall 2004. Our most recent enrollment in Fall 2009, saw an increase of 15 African American master's students over Fall 2008, but we still have not reached the peak enrollment set in Fall 2007 in either absolute numbers or percentages. In fact, both Fall 2006 and Fall 2007 saw higher percentages of the total domestic master's enrollment than in Fall 2009. We have exceeded our goals of a minimum 1.4% Asian American, 1.0% Hispanic American, and 0.5% Native American/Alaskan Native in master's programs in every year. See Table 2.

In doctoral enrollment, we exceeded 8% African American enrollment for the first time in Fall 2009, with the increase of 13 such students over Fall 2008. With the exception of Fall 2006, we have met our goal of enrolling 1.4% Asian Americans each year. We have at least doubled our goal of 1% Hispanic enrollment, and far exceeded our enrollment goal of .5% Native Americans in every year. See Table 3.

Between Fall 2008 and Fall 2009, the percentage of men in master's programs increased slightly from 49% to 50% (rounded). Both the absolute numbers and percentage of men in doctoral programs increased, while the number of women increased in absolute numbers, but decreased significantly in percentages (46.6% in Fall 2009 compared to 48.0% in Fall 2008). See Tables 4 and 5.

The enrollment of international students in master's programs increased in absolute numbers but stayed virtually the same in percentages of total master's enrollment in Fall 2009 compared to Fall 2008. In doctoral programs, the absolute numbers of international students increased, but the percentage of total doctoral students decreased slightly. Still, the number of international doctoral students enrolled in Fall 2009 was the highest in these years (Fall 2004-Fall 2009). See Tables 6 and 7.

In summary, in Fall 2009, we

- met our goal of increasing total graduate enrollment, in both absolute numbers and in the percentage of the University enrollment. In fact, in Fall 2009, compared to the previous five years, we had the largest increase in graduate enrollment (7.45%). The previous largest increase of 4.82% was in Fall 2007;
- met our goal of increasing doctoral enrollment;
- met our goal of increasing graduate enrollment among African Americans and Asian Americans, master's enrollment of Native Americans and doctoral enrollment of Hispanic Americans. Hispanic American master's enrollment remained constant and Native American doctoral enrollment decreased. However, it should be noted that Fall 2009 was the first year in which students were able to claim Hawaiian and 2+ races as racial categories, so this will have affected the counts in other categories.

<u>Graduation</u>

Degrees awarded are given in Table 8 (in the appendix); master's and doctoral degrees awarded by race/ethnicity are given in Tables 9 and 10; master's and doctoral degrees awarded by gender are given in Tables 11 and 12; master's and doctoral degrees awarded by nationality are given in Tables 13 and 14. Note: The 2008/09 graduation year is the most recent for which we have official data.

Production of master's degrees decreased by 17 students in 2008/09 compared to the previous year, while specialist and doctoral students increased significantly. Specialist degrees doubled in 2008/09 compared to 2007/08, and we awarded 16 more doctoral degrees. See Table 8. Over-all degree production in 2008/09 was slightly higher (by three students) than in 2007/08.

In 2008/09, compared to the previous year, more master's degrees were awarded to Native Americans, African Americans, and Caucasian students, in absolute numbers and as a percentage of all master's degrees awarded to domestic students. In the same time period, one less master's degree was awarded to an Asian American, and four fewer master's degrees were awarded to Hispanic Americans. In 2008/09, we exceeded our goals of 8% African American master's degree production, 1.4% Asian American master's degree production, 1% Hispanic American master's degree production, and .05% Native American master's degree production. In fact, for Native Americans, we tripled our goal. See Table 9.

Compared to 2007/08, one more Native American, one more Asian American and 9 more Caucasians received doctoral degrees in 2008/09. Six fewer doctoral degrees were awarded to African American students, and one less to Hispanic Americans. In the 2008/09 graduation year, we did not meet our goal of a minimum 8% doctoral graduation of African Americans, which was very disappointing as we had met that goal in the previous year. In addition, we did not meet our goal of graduating 1.4% Asian Americans from doctoral programs. We did continue to meet our goal of .05% Native American graduation and 1.4% Hispanic American graduation. See Table 10.

In 2008/09, compared to 2007/08, the same numbers of women received master's degrees, although their percentage of all master's degrees increased slightly. As in several previous years, the 2008/09 graduation year saw more women than men earning master's degrees. In 2008/09 compared to 2007/08, fewer men earned master's degrees, falling by 17 students. (See Table 11.) With regard to doctoral degrees, in 2008/09, women received the largest percentage (46%) awarded to women since 2000/01 (52%) and 1999/00 (46.5%), when fewer total doctoral degrees were awarded. As a result, the percentage of doctoral degrees awarded to men and women moved closer to equal in 2008/09, continuing a trend started in 2007/08. (See Table 12.)

In 2008/09, compared to 2007/08, fewer international students received master's degrees (127 compared to 148, 13% compared to 15%), but international students received more doctoral degrees (55 compared to 46; 34% compared to 32%). See Tables 13 and 14.

In summary, in the 2008/09 graduation year, we:

- Met our goal of increasing graduate degrees awarded, with a very large increase in the number of doctoral degrees awarded (16);
- Did not meet our goal of increasing the number of master's degrees, which

decreased from 963 in the previous year to 946;
- Met our diversity goals in master's graduation for Native Americans and African Americans;
- Did not meet our diversity goal in doctoral degree production for African American students, a particularly disappointing outcome since we had, for the first time, reached that goal in the previous year;
- Met our diversity goals with regard to gender for master's degrees (in percentage of the total master's degree production, although the absolute numbers of women receiving master's degrees remained the same) and for doctoral degrees;
- Met our goal of increasing the number of international students receiving doctoral degrees, but not those receiving master's degrees.

Graduate Assistantships, Fellowships and Travel Grants

During the fiscal year 2010, there were 50 distinguished doctoral fellows (DDF) and 181 doctoral academy fellows (DAF), with 21 new students accepting the DDF fellowship in Fall 2009. Two new SREB scholars entered the University in fiscal year 2010, and two left, keeping our total at 13. One of the scholars who left transferred to the University of Arizona, and the other graduated with a degree in Environmental Dynamics. The Benjamin Franklin Lever Tuition Fellowship was awarded to 66 graduate students, 38 new recipients and 28 continuing. With regard to travel grants, 593 grants allowed students to attend conferences in 34 states and the District of Columbia, as well as international conferences around the globe. For more detailed information, please see the report from Vicky Hartwell.

On-going, Yearly, and Traditional Activities

In 2009-10, we continued organizing and/or financing these on-going special events not included in the Graduate and International Recruitment and Admissions report:

- ✓ *Graduate Student Professional Learning Series*, Fall 2009;
- ✓ Spring 2010 luncheon seminars for graduate students described earlier;
- ✓ The August workshop for graduate assistants presented by the Teaching and Faculty Support Center;
- ✓ The annual New Graduate Student Orientation held in August;
- ✓ Monthly meetings of the Graduate Dean's Student Advisory Board;
- ✓ Training for new graduate coordinators;
- ✓ Support for the Black Graduate Students Association;
- ✓ Lunch meetings for SREB scholars in each of the fall and spring semesters;
- ✓ A meeting with the Distinguished Doctoral Fellows and the Doctoral Academy Fellowship recipients in the early Spring 2010.

In addition, we continued these routine activities:

- o Administering the Distinguished Doctoral Fellowship, Doctoral Academy Fellowship, and Graduate Fellowship for the Master of Fine Arts programs;
- o Administering the Benjamin Franklin Lever Tuition Fellowship program;

- Administering the Southern Regional Education Board Fellowship program on our campus;
- Administering the Graduate Student Travel Grant program;
- Managing the periodic review of all degree programs (see the Annual Report from the Director of the Office of Program Assessment);
- Managing the Teaching Assistant Effectiveness Advisory Committee of the Graduate Council;
- Managing the Academic Appeals Subcommittee of the Graduate Council;
- Organizing, chairing and serving on the Graduate Council; creating the Council agenda and minutes; posting the agenda and minutes to the web; publicizing the activities of the Council;
- Managing the functional aspects of ISIS; trouble shooting for ISIS issues;
- Processing all out-of-career registrations for undergraduate and graduate students;
- Co-coordinating the All-University Commencement ceremony; and organizing all of the aspects of commencement that specifically pertain to graduate students;
- Over-seeing the application for and approval of graduate faculty status;
- Preparing all of the material for the University Course and Programs Committee; preparing and posting the agenda and the minutes for the Committee;
- Editing the *Graduate School Catalog*;
- Preparing several reports (e.g. Peterson's Guide; GRE; NSF);
- Serving as an *ex officio* member of the Faculty Senate, and reporting Graduate Council and University Course and Program Committee business to the Senate;
- Processing and monitoring the admissions, academic progress, committee assignments, change of majors, and degree completions of all graduate students;
- Processing and monitoring the tuition payments for all students on graduate assistantships or fellowships;
- Processing and monitoring all applications for graduate faculty status;
- Serving on the professional board and the users board of the Survey Research Center;
- Serving on the Campus Council;
- Serving on the Disability Committee;
- Serving on the English as a Second Language Committee;
- Creating the course schedules for the seven interdisciplinary degree programs and the two interdisciplinary graduate certificate programs; monitoring and making changes to the schedules;
- Organizing the work of graduate student grievance committees;
- Participating in the orientation for international students;
- Organizing monthly meetings of the interdisciplinary program directors;
- Organizing regular meetings of the Preparing for the Professoriate Committee;
- Organizing a team for the Susan G. Komen race;
- Sponsoring two tables at the annual Martin Luther King, Jr. recommitment banquet;
- Monitoring the Bush/Clinton Fulbright Tsunami Relief Initiative students;
- and serving on a wide variety of other committees and initiatives.

Ms. Kendra Smith once again took the leadership role in this year's Carver Project. This summer we hosted 30 students from 11 institutions (Langston University, Fort Valley State University, Grambling State University, Huston-Tillotson University, Norfolk State University, Philander

Smith College, Rust College, Southern University, University of Arkansas, University of Arkansas, Pine Bluff, and University of Puerto Rico, Mayaguez).

Associate Dean Koski attended the annual meetings of the Council of Graduate Schools, the national professional association, in San Francisco, in December 2009. Associate Dean Koski and Ms. Lynn Mosesso, Director of the Office of Graduate and International Recruitment and Admissions, attended the annual meetings of the Conference of Southern Graduate Schools, in Savannah, Georgia. Gloria Flores attended the Washington International Education Council Conference in Washington DC. Sandye McCraw, Stacey Clay, and Alisa Wright attended the NAFSA Region II Conference in Dallas, Texas. Vicky Hartwell attended the annual conference of the National Association for Graduate Admissions Professionals (NAGAP) in San Francisco. Sandy McCraw, Stacey Clay, and Dylan Presley attended the Arkansas NAFSA State meeting at Hendrix College in Conway, Arkansas. At that conference, Sandye McCraw presented a session on "Resources for International Credential Evaluation." Susan Byram, Gloria Flores and Catherine Cunningham attended the NAFSA National Conference in Kansas City, Kansas along with other U of A staff from the Offices of International Students and Scholars, Study Abroad and Spring International Language Center.

Lynn Mosesso and Susan Byram continue to serve on the Board of Directors for the Foundation for the International Exchange of Students;

Interdisciplinary Programs

There are seven interdisciplinary degree programs and two graduate certificate programs which report directly to the Graduate School: The M.S. and Ph.D. in Cell and Molecular Biology; the M.S. and Ph.D. in Microelectronics-Photonics; the Ph.D. in Public Policy; the M.S. and Ph.D. in Space and Planetary Sciences, and the graduate certificates in Gerontology and Preparing for the Professoriate. Table 15 shows the enrollment in each of the degree programs from Fall 2001 to Fall 2009. For Fall 2009, Table 16 shows the enrollment by race/ethnicity; Table 17 shows the enrollment by gender; and Table 18 shows the enrollment by nationality.

In Cell and Molecular Biology, the master's enrollment has been variable across the years, with a large increase between Fall 2008 and Fall 2009. CEMB doctoral enrollment declined slightly (by two students) in Fall 2009 compared to Fall 2008. The M.S. in Microelectronics-Photonics has been variable with its highest enrollment in Fall 2006; between Fall 2008 and Fall 2009, the enrollment held steady at 22 students. The Ph.D. in Microelectronics-Photonics saw one fewer student in Fall 2009 than in Fall 2008. In Public Policy, an enrollment limit in the 60s was reached in Fall 2004 and has held steady in that range ever since, although the Fall 2009 saw the largest enrollment ever with 66 students. Space and Planetary Sciences had its largest enrollment of doctoral students in Fall 2008, which was matched in Fall 2009 (21 students in each year), but has had no or only one master's student each year since its inception.

Of these programs, Public Policy is the most diverse in terms of racial/ethnic category, and indeed is the most diverse Ph.D. program on campus, equaling or exceeding the other cross-college interdisciplinary programs in all racial and ethnic categories in absolute numbers. (See Table 16.) Of its domestic students, this program enrolls 64% Caucasian students and the rest

are racially or ethnically diverse. Public Policy also enrolls more women than men, as do the M.S. and Ph.D. programs in Cell and Molecular Biology. (See Table 17). Cell and Molecular Biology also enrolls the most international students – 73% in the master's program and 70% in the Ph.D. program. The next largest is Microelectronics-Photonics (See Table 18).

Collectively, these cross-college interdisciplinary programs produced 1.27% of the total master's graduates in 2008/09 and nearly 16% of the doctoral graduates. If we add the Environmental Dynamics Ph.D. production to the total of the cross-college interdisciplinary programs, these programs produced 17.5% of the total doctoral awards in 2008/09. Since 1998/99, these programs (including ENDY) have produced over 10% of the total doctoral degrees. See Tables 19, 20, and 21.

Highlights for each of the programs follow, but please see the individual annual reports for each of these programs as well as the Office for Studies on Aging.

Cell and Molecular Biology

- ✓ Ten faculty associated with the Cell & Molecular Biology program received grant funding;
- ✓ 31 new grants were awarded to faculty associated with this program;
- ✓ 18 peer-reviewed publications by program faculty and/or students were published, while seven were under review;
- ✓ 48 conference presentations were made by program faculty and/or students;
- ✓ One patent request was filed;
- ✓ A CEMB student won in the molecular biology category at the Abstract to Contract Student Paper presentation sponsored by the Provost's Office and the Graduate School.

Microelectronics-Photonics

- ✓ Received funding for an NSF Research Experience for Undergraduates program for three years to support ten students on campus each summer for ten weeks; the Co-PIs were Ken Vickers and Rick Ulrich;
- ✓ Submitted a proposal for an NSF professional science master's degree, but this was not funded;
- ✓ Saw fifteen published papers or presentations authored or co-authored by students.

The Office for Studies on Aging (gerontology graduate certificate)

- ✓ The Office hosted a workshop and reception for U of A faculty and administrators;
- ✓ The Office co-directors received grants from three organizations;
- ✓ Office faculty gave two invited presentations, presented three papers at national conferences, and authored or co-authored five book chapters.

Public Policy

- ✓ 18 students presented papers at conferences;
- ✓ One student received a three-year $320,000 grant from the Office of Rural Health in Washington, DC;
- ✓ One student received a dissertation grant from the Robert Wood Johnson Foundation;
- ✓ 15 publications involving students as authors or co-authors were published during the

year or accepted for publication in the coming year;
- ✓ The program added a specialization in aging studies.

Space and Planetary Sciences and the Space Center

- ✓ In early 2009, current students took incoming students on a field trip to the Grand Canyon and Meteor Crater, Arizona;
- ✓ Program faculty took 22 students to the Lunar and Planetary Science Conference for presentations and poster sessions;
- ✓ During 2009-10, twelve grants were awarded to eight different SPAC faculty, for a total of $3.7 million;
- ✓ Center faculty and students published or presented at conferences 70 publications.

Actions by the Graduate Council

In 2009-10, the Graduate Council approved 31 program changes, five policy changes, and 163 course changes. It also approved the elimination of the Master of Transportation Engineering degree and the M.A. degree in Drama. It approved the creation of a new "Graduate Certificate in Business," and two new concentrations in the MSN program. The Council also approved graduate faculty nominations, as well as courses to be inactivated, to remain inactive and to be deleted.

From August 2009 to June 2010, the Academic Appeals Subcommittee of the Graduate Council heard 43 student petitions and one full grievance.

APPENDIX – TABLES

Table 1. Graduate Enrollment in Frequencies and Percentages of Total University Enrollment, Fall 2004-Fall 2009

	Master's	Specialist	Doctoral	Grad Cert	Non-Degree	Total Grad	% and N Change	Total Univ**	% Univ
Fall 2009	2,265	22	1,110	19	190	3,606	7.45%	19,849	18.17%
							250		
Fall 2008	2,108	27	1,043	13	165	3,356	2.10%	19,194	17.48%
							69		
Fall 2007	2,081	29	1,017	5	155	3,287	4.82%	18,648	17.63%
							151		
Fall 2006	1,967	18	1,026	1	124	3,136	1.69%	17,926	17.49%
							52		
Fall 2005	2,007	10	922	2	143	3,084	3.87%	17,821	17.31%
							115		
Fall 2004	1,954	16	877	1	121	2,969		17,269	17.19%

Table 2: Master's Enrollment, by Race/Ethnicity, in Frequencies and Percentages of Total Domestic Master's Enrollment, Fall 2004-Fall 2009

Master's	African American	Asian American	Hawaiian	Hispanic American	Native American	2+ Races	White	Unknown	Total
Fall 2009	171	44	1	52	29	44	1,604	25	1,970
	8.68%	2.23%	0.05%	2.64%	1.47%	2.23%	81.42%	1.27%	
Fall 2008	156	42		52	27		1,526	30	1,833
	8.51%	2.29%		2.84%	1.47%		83.25%	1.64%	
Fall 2007	173	33		51	33		1,461	43	1,794
	9.64%	1.84%		2.84%	1.84%		81.44%	2.40%	
Fall 2006	156	38		37	23		1,379	38	1,671
	9.34%	2.27%		2.21%	1.38%		82.53%	2.27%	
Fall 2005	144	36		35	17		1,389	59	1,680
	8.57%	2.14%		2.08%	1.01%		82.68%	3.51%	
Fall 2004	129	34		30	29		1,358	34	1,614
	7.99%	2.11%		1.86%	1.80%		84.14%	2.11%	

Table 3: Doctoral Enrollment, by Race/Ethnicity, in Frequencies and Percentages of Total Domestic Doctoral Enrollment, Fall 2004-Fall 2009

Doctoral	African American	Asian American	Hawaiian	Hispanic American	Native American	2+ Races	White	Unknown	Total
Fall 2009	68	17	0	21	14	17	638	21	796
	8.54%	2.14%	0.00%	2.64%	1.76%	2.14%	80.15%	2.64%	
Fall 2008	55	14		15	17		619	24	744
	7.39%	1.88%		2.02%	2.28%		83.20%	3.23%	
Fall 2007	58	11		16	16		602	30	733
	7.91%	1.50%		2.18%	2.18%		82.13%	4.09%	
Fall 2006	41	7		19	13		608	33	721
	5.69%	0.97%		2.64%	1.80%		84.33%	4.58%	
Fall 2005	41	9		20	12		551	30	663
	6.18%	1.36%		3.02%	1.81%		83.11%	4.52%	
Fall 2004	40	11		16	13		546	5	631
	6.34%	1.74%		2.54%	2.06%		86.53%	0.79%	

Table 4: Master's Enrollment by Gender, in Frequencies and Percentages of Total Master's Enrollment, Fall 2004-Fall 2009

Master's	Male	Female	Total
Fall 2009	1,142	1,123	2,265
	50.42%	49.58%	
Fall 2008	1,035	1,073	2,108
	49.10%	50.90%	
Fall 2007	1,019	1,062	2,081
	48.97%	51.03%	
Fall 2006	970	997	1,967
	49.31%	50.69%	
Fall 2005	991	1,016	2,007
	49.38%	50.62%	
Fall 2004	946	1,008	1,954
	48.41%	51.59%	

Table 5: Doctoral Enrollment by Gender, in Frequencies and Percentages of Total Doctoral Enrollment, Fall 2004-Fall 2009

Doctoral	Male	Female	Total
Fall 2009	593	517	1,110
	53.42%	46.58%	
Fall 2008	542	501	1,043
	51.97%	48.03%	
Fall 2007	545	472	1,017
	53.59%	46.41%	
Fall 2006	565	461	1,026
	55.07%	44.93%	
Fall 2005	509	413	922
	55.21%	44.79%	
Fall 2004	490	387	877
	55.87%	44.13%	

Table 6: Master's Enrollment by Nationality, in Frequencies and Percentages of Total Master's Enrollment, Fall 2004-Fall 2009

	Domestic	Int'l	Total
Fall 2009	1,970	295	2,265
	86.98%	13.02%	
Fall 2008	1,833	275	2,108
	86.95%	13.05%	
Fall 2007	1,794	287	2,081
	86.21%	13.79%	
Fall 2006	1,671	296	1,967
	84.95%	15.05%	
Fall 2005	1,680	327	2,007
	83.71%	16.29%	
Fall 2004	1,614	340	1,954
	82.60%	17.40%	

Table 7: Doctoral Enrollment by Nationality, in Frequencies and Percentages of Total Doctoral Enrollment, Fall 2004-Fall 2009

	Domestic	Int'l	Total
Fall 2009	796	314	1,110
	71.71%	28.29%	
Fall 2008	744	299	1,043
	71.33%	28.67%	
Fall 2007	733	284	1,017
	72.07%	27.93%	
Fall 2006	721	305	1,026
	70.27%	29.73%	
Fall 2005	663	259	922
	71.91%	28.09%	
Fall 2004	631	246	877
	71.95%	28.05%	

Table 8: Graduate Degrees Awarded in Frequencies and Percentages, 1998/99-2008/09

	Master's	Specialist	Doctoral	Total
2008-09	946	8	160	1,114
2007-08	963	4	144	1,111
2006-07	939	1	115	1,055
2005-06	987	3	134	1,124
2004-05	909	3	145	1,057
2003-04	833	12	110	955
2002-03	803	4	120	927
2001-02	736	5	106	847
2000-01	737	9	90	836
1999-00	758	10	86	854
1998-99	713	4	94	811

Table 9: Master's Degrees Awarded, by Race/Ethnicity, in Frequencies and Percentages of Total Domestic Master's Degrees Awarded, 1998/99 – 2008/09

Master's	Native American	African American	Asian American	Hispanic American	White	Unknown	Total
2008-09	12	71	19	22	684	11	819
	1.47%	8.67%	2.32%	2.69%	83.52%	1.34%	
2007-08	10	67	20	26	680	12	815
	1.23%	8.22%	2.45%	3.19%	83.44%	1.47%	
2006-07	9	70	19	19	682	10	809
	1.11%	8.65%	2.35%	2.35%	84.30%	1.24%	
2005-06	8	64	18	14	709	31	844
	0.95%	7.58%	2.13%	1.66%	84.00%	3.67%	
2004-05	11	78	21	15	634	51	810
	1.36%	9.63%	2.59%	1.85%	78.27%	6.30%	
2003-04	9	60	18	17	583	5	692
	1.30%	8.67%	2.60%	2.46%	84.25%	0.72%	
2002-03	12	68	19	15	555	2	671
	1.79%	10.13%	2.83%	2.24%	82.71%	0.30%	
2001-02	9	70	16	8	517	3	623
	1.44%	11.24%	2.57%	1.28%	82.99%	0.48%	
2000-01	17	43	19	15	540	0	634
	2.68%	6.78%	3.00%	2.37%	85.17%	0.00%	
1999-00	11	39	20	7	584	2	663
	1.66%	5.88%	3.02%	1.06%	88.08%	0.30%	
1998-99	5	40	12	11	559	1	628
	0.80%	6.37%	1.91%	1.75%	89.01%	0.16%	

Table 10: Doctoral Degrees Awarded, by Race/Ethnicity, in Frequencies and Percentages of Total Domestic Doctoral Degrees, 1998/99-2008/09

Doctoral	Native American	African American	Asian American	Hispanic American	White	Unknown	Total
2008-09	2	3	1	2	90	7	105
	1.90%	2.86%	0.95%	1.90%	85.71%	6.67%	
2007-08	1	9	0	3	81	4	98
	1.02%	9.18%	0.00%	3.06%	82.65%	4.08%	
2006-07	0	5	0	3	63	6	77
	0.00%	6.49%	0.00%	3.90%	81.82%	7.79%	
2005-06	0	9	2	3	79	1	94
	0.00%	9.57%	2.13%	3.19%	84.04%	1.06%	
2004-05	3	6	5	4	83	15	116
	2.59%	5.17%	4.31%	3.45%	71.55%	12.93%	
2003-04	3	5	4	1	60	0	73
	4.11%	6.85%	5.48%	1.37%	82.19%	0.00%	
2002-03	1	8	3	1	71	1	85
	1.18%	9.41%	3.53%	1.18%	83.53%	1.18%	
2001-02	1	3	4	2	74	0	84
	1.19%	3.57%	4.76%	2.38%	88.10%	0.00%	
2000-01	2	5	3	1	56	0	67
	2.99%	7.46%	4.48%	1.49%	83.58%	0.00%	
1999-00	1	2	1	1	60	1	66
	1.52%	3.03%	1.52%	1.52%	90.91%	1.52%	
1998-99	7	2	4	1	60	0	74
	9.46%	2.70%	5.41%	1.35%	81.08%	0.00%	

Table 11: Master's Degrees Awarded, by Gender, in Frequencies and Percentages of Total Master's Degrees, 1998/99 – 2008/09

Master's	Male	Female	Total
2008-09	462	484	946
	48.84%	51.16%	
2007-08	479	484	963
	49.74%	50.26%	
2006-07	481	458	939
	51.22%	48.78%	
2005-06	503	484	987
	50.96%	49.04%	
2004-05	444	465	909
	48.84%	51.16%	
2003-04	419	414	833
	50.30%	49.70%	
2002-03	386	417	803
	48.07%	51.93%	
2001-02	328	408	736
	44.57%	55.43%	
2000-01	326	411	737
	44.23%	55.77%	
1999-00	368	390	758
	48.55%	51.45%	
1998-99	318	395	713
	44.60%	55.40%	

Table 12: Doctoral Degrees Awarded, by Gender, in Frequencies and Percentages of Total Doctoral Degrees Awarded, 1998/99 – 2008/09

Doctoral	Male	Female	Total
2008-09	87	73	160
	54.38%	45.63%	
2007-08	80	64	144
	55.56%	44.44%	
2006-07	71	44	115
	61.74%	38.26%	
2005-06	79	55	134
	58.96%	41.04%	
2004-05	85	60	145
	58.62%	41.38%	
2003-04	75	35	110
	68.18%	31.82%	
2002-03	68	52	120
	56.67%	43.33%	
2001-02	58	48	106
	54.72%	45.28%	
2000-01	43	47	90
	47.78%	52.22%	
1999-00	46	40	86
	53.49%	46.51%	
1998-99	57	37	94
	60.64%	39.36%	

Table 13: Master's Degrees Awarded, by Nationality, in Frequencies and Percentages of Total Master's Degrees, 1998/99 – 2008/09

Master's	Domestic	Int'l	Total
2008-09	819	127	946
	86.58%	13.42%	
2007-08	815	148	963
	84.63%	15.37%	
2006-07	809	130	939
	86.16%	13.84%	
2005-06	844	143	987
	85.51%	14.49%	
2004-05	810	99	909
	89.11%	10.89%	
2003-04	692	141	833
	83.07%	16.93%	
2002-03	671	132	803
	83.56%	16.44%	
2001-02	623	113	736
	84.65%	15.35%	
2000-01	634	103	737
	86.02%	13.98%	
1999-00	663	95	758
	87.47%	12.53%	
1998-99	628	85	713
	88.08%	11.92%	

Table 14: Doctoral Degrees Awarded, by Nationality, in Frequencies and Percentages of Total Doctoral Degrees, 1998/99 – 2008/09

Doctoral	Domestic	Int'l	Total
2008-09	105	55	160
	65.63%	34.38%	
2007-08	98	46	144
	68.06%	31.94%	
2006-07	77	38	115
	66.96%	33.04%	
2005-06	94	40	134
	70.15%	29.85%	
2004-05	116	29	145
	80.00%	20.00%	
2003-04	73	37	110
	66.36%	33.64%	
2002-03	85	35	120
	70.83%	29.17%	
2001-02	84	22	106
	79.25%	20.75%	
2000-01	67	23	90
	74.44%	25.56%	
1999-00	66	20	86
	76.74%	23.26%	
1998-99	74	20	94
	78.72%	21.28%	

Table 15: Enrollment in Cross-College Interdisciplinary Degree Programs, Fall 2001 – Fall 2009

	CEMBMS	CEMBPH	MEPHMS	MEPHPH	PUBPPH	SPACMS	SPACPH	TOTAL
Fall 2009	11	54	22	25	66	0	21	199
Fall 2008	3	56	22	26	61	0	21	189
Fall 2007	9	45	30	26	62	1	15	188
Fall 2006	8	44	34	25	64	0	16	191
Fall 2005	11	39	30	24	61	1	6	172
Fall 2004	20	34	26	26	63	N/A	N/A	169
Fall 2003	17	31	21	27	56	N/A	N/A	152
Fall 2002	13	15	14	23	44	N/A	N/A	109
Fall 2001	6	8	18	17	36	N/A	N/A	85

Table 16: Enrollment in Cross-College Interdisciplinary Degree Programs, by Race/Ethnicity, Fall 2009

Fall 2009	Native American	African American	Asian American	Hawaiian	Hispanic American	2+ Races	White	Unknown	Total Domestic
CEMBMS	0	0	1	0	0	0	2	0	3
CEMBPH	0	1	1	0	0	0	13	1	16
MEPHMS	0	3	0	0	1	0	12	0	16
MEPHPH	0	1	0	0	0	0	9	1	11
PUBPPH	1	14	1	0	2	1	35	1	55
SPACMS	0	0	0	0	0	0	0	0	0
SPACPH	0	1	0	0	1	1	15	0	18
TOTAL #	1	20	3	0	4	2	86	3	119
TOTAL %	0.84%	16.81%	2.52%	0.00%	3.36%	1.68%	72.27%	2.52%	100.00%

Table 17: Enrollment in Cross-College Interdisciplinary Degree Programs, by Gender, Fall 2009

Fall 2009	Male	Female	Total
CEMBMS	5	6	11
	45.45%	54.55%	
CEMBPH	23	31	54
	42.59%	57.41%	
MEPHMS	21	1	22
	95.45%	4.55%	
MEPHPH	22	3	25
	88.00%	12.00%	
PUBPPH	25	41	66
	37.88%	62.12%	
SPACMS	0	0	0
	0%	0%	
SPACPH	14	7	21
	66.67%	33.33%	
TOTAL #	110	89	199
TOTAL %	55.28%	44.72%	

Table 18: Enrollment in Cross-College Interdisciplinary Degree Programs, by Nationality, Fall 2009

Fall 2009	Domestic	Int'l	Total
CEMBMS	3	8	11
	27.27%	72.73%	
CEMBPH	16	38	54
	29.63%	70.37%	
MEPHMS	16	6	22
	72.73%	27.27%	
MEPHPH	11	14	25
	44.00%	56.00%	
PUBPPH	55	11	66
	83.33%	16.67%	
SPACMS	0	0	0
	0.00%	0.00%	
SPACPH	18	3	21
	85.71%	14.29%	
TOTAL #	119	80	199
TOTAL %	59.80%	40.20%	

Table 19: Master's Degrees Awarded in Cross-College Interdisciplinary Degree Programs, as a Percentage of All Master's Degrees Awarded, 1998/99 – 2008/09

	CEMBMS	MEPHMS	SPACMS	Total Interdsic	Total Univ	% Univ
2008-09	1	11	0	12	946	1.27%
2007-08	4	15	1	20	963	2.08%
2006-07	5	13	0	18	939	1.92%
2005-06	7	7	1	15	987	1.52%
2004-05	10	7	0	17	909	1.87%
2003-04	4	8	N/A	12	833	1.44%
2002-03	3	4	N/A	7	803	0.87%
2001-02	1	7	N/A	8	736	1.09%
2000-01	0	4	N/A	4	737	0.54%
1999-00	0	0	N/A	0	758	0.00%
1998-99	N/A	0	N/A	0	713	0.00%

Table 20: Doctoral Degrees Awarded in all Cross-College Interdisciplinary Degree Programs, as a Percentage of All Doctoral Degrees Awarded, 1998/99 – 2008/09

	CEMBPH	MEPHPH	PUBPPH	SPACPH	Total Interdisc	Total Univ	% Univ
2008-09	5	7	12	1	25	160	15.63%
2007-08	8	3	5	0	16	144	11.11%
2006-07	3	4	4	0	11	115	9.57%
2005-06	6	5	10	1	22	134	16.42%
2004-05	3	8	6	0	17	145	11.72%
2003-04	2	2	1	N/A	5	110	4.55%
2002-03	0	2	1	N/A	3	120	2.50%
2001-02	0	0	0	N/A	0	106	0.00%
2000-01	0	0	0	N/A	0	90	0.00%
1999-00	N/A	0	0	N/A	0	86	0.00%
1998-99	N/A	N/A	0	N/A	0	94	0.00%

Table 21: Doctoral Degrees Awarded in All Cross-College Interdisciplinary Degree Programs and Environmental Dynamics, with the Percentage of the Total Doctoral Degrees Awarded, 1998/99 – 2008/09

	CEMBPH	ENDYPH	MEPHPH	PUBPPH	SPACPH	Total Interdisc	Total Univ	% Univ
2008-09	5	3	7	12	1	28	160	17.50%
2007-08	8	6	3	5	0	22	144	15.28%
2006-07	3	4	4	4	0	15	115	13.04%
2005-06	6	4	5	10	1	26	134	19.40%
2004-05	3	3	8	6	0	20	145	13.79%
2003-04	2	4	2	1	N/A	9	110	8.18%
2002-03	0	2	2	1	N/A	5	120	4.17%
2001-02	0	7	0	0	N/A	7	106	6.60%
2000-01	0	1	0	0	N/A	1	90	1.11%
1999-00	N/A	0	0	0	N/A	0	86	0.00%
1998-99	N/A	0	N/A	N/A	N/A	0	94	0.00%
TOTAL	27	34	31	39	2	133	1304	10.20%

Graduate Student Activities

Focus: Graduate Student Retention and Completion

The Office of Graduate Student Activities works to increase graduate student retention and completion by researching, initiating and implementing professional and personal development programs for graduate students. We continuously evaluate programs offered to insure topic relevancy and appropriate presentation time of day for student attendance. The Director of Graduate Student Activities works closely with the leadership of the Graduate School to insure the efficacy of the programs presented.

Preparing for the Professoriate

When doctoral students begin their careers as professors, they may be very well prepared in their subject area, but less prepared in the skills and knowledge they will need to be successful as members of the faculty. The Preparing for the Professoriate program strives to give doctoral students the preparation they will need in their first position. Two courses are offered: *Preparing for the Professoriate: Work in the Classroom*, which focuses on teaching skills; and *Preparing for the Professoriate: Work outside the Classroom*, which focuses on the process of application and entry into an academic position, how to navigate membership in an academic department, and the process for earning tenure. The Graduate School enlisted a committee of graduate faculty who designed a Preparing for the Professoriate certificate program for doctoral

students, which includes these two courses and two other courses. This certificate will enhance the doctoral student's attractiveness as a first-time hire at a college or university.

Graduate Student Professional Learning Series

This program was started in 2005, and has enjoyed much success. The focus of this program is the responsible conduct of research (RCR); several departments now require all of their new graduate students to attend this series. Presentations are made by graduate faculty. Topics for the presentations are:

1) Introduction to Research Ethics
2) Authorship and Publication Issues
3) Research Misconduct—Policies and Consequences

Each presentation is concluded with a dinner for all attendees (no charge) where students can discuss the presentation and its implications in their own graduate experience. Students who attend all three sessions receive a paper certificate of completion of the series. In fall 2009 we videotaped the series and it is now available on the University's Office of Research Support and Sponsored Programs web site.

The table below shows the growth in attendance in this program:

Responsible Conduct of Research Training for Graduate Students

	2006	2007	2008	2009
Total number of students attending	141	207	221	312
Number of certificates — student attended all 3 sessions	28	44	50	74
Cost for three sessions	$3,048.24	$3,167.19	$3,386.44	$4,696.46 plus $775 for videotaping

Graduate Student Lunch Seminars

In 2007 the Graduate School instituted the Graduate Student Lunch Seminars, a series of ten lunch meetings where students could meet one another and learn about a topic of interest. Due to low attendance, we have chosen to change this program to three monthly lunches in the spring semester. The lunch program begins at noon with a 15-minute "Talk to the Dean" opportunity. The last 45 minutes of the hour is reserved for the presentation topic. Topics for Spring 2010 were:

January: *Bullying in Academia*, presented by the director of the University Ombuds Office and the Medical Director of the University's Counseling and Psychological Services unit

February: *Finding Outside Funding for your Research*, presented by the director of the Environmental Dynamics Interdisciplinary Ph.D. program

March: *Keeping a work / life balance*, presented by the University's director of health promotion. Between 30 and 40 students attended each session.

New Graduate Student Orientation

As students enter a graduate program, they are excited about the challenge, but also a little worried about their ability to succeed. So each August the Graduate School hosts an in-person orientation for entering graduate students. A highly successful event, the New Graduate Student Orientation receives accolades from students each year in their evaluations of the event. The event formula provides graduate students with important information on their relationship and contract with the University of Arkansas and the Graduate School, but also includes valuable tips and techniques to help students succeed as graduate students, for example, a session on mentoring: why they need a mentor, how to find one, and what to expect from this relationship. We also include breakout sessions on various topics, and these are a great success, proving once again that students like choices! Session topics include: Multicultural Issues, Getting Familiar with Fayetteville, Tuition/Assistantships/Fellowships and Graduate Student Panel. Over 50 faculty, staff and graduate students volunteer to work at New Graduate Student Orientation each fall, and more new graduate students attend each August.

Doctoral Completion Project

Although the U of A was not chosen as a primary participating school in the 2007 Council of Graduate Schools Ph.D. Completion Project, we are a partner institution in the project. We decided to implement as many of the goals from our grant application as possible, given limited resources.

Each year the faculty from twelve doctoral programs that participate in the project develop goals they would like to meet during that academic year. For 2009/2010 the committee decided to present a day-long seminar on Grant Proposal Development. Student evaluations of the event indicated that students were highly satisfied with the workshop (avg. 4.6 out of 5.0 possible) and that the information was not gained elsewhere ("How well was this topic covered in your doctoral courses prior to this workshop" -- avg 1.9 out of 5.0 possible.) Students indicated the workshop time of day was convenient (avg 4.5 out of 5 possible.)

Teaching Assistant Effectiveness Advisory Committee

This committee is a standing committee of the Graduate Council which assists departments to insure that all teaching assistants are well prepared for their teaching assignments. Some academic departments house many teaching assistants and do a highly effective job of preparing them. Other departments, with fewer TAs and fewer resources, could use assistance. Made up of faculty and graduate student teaching assistants, the committee has developed these programs and practices for each academic year:
September: Present a workshop for incoming TAs on Academic Honesty, Disruption in the Classroom, and Equity in the Classroom
October: Present a workshop on Blackboard software for TAs.
February: Hold a working luncheon for TA supervisors to discuss issues they face.
March: Present a workshop for TAs on using technology in their courses

These activities highly benefit the teaching assistants, and also create a dialogue among the TA supervisors across the campus.

Graduate Dean's Student Advisory Board

This group of graduate students is chosen from the academic colleges to represent their fellow students in monthly meetings with the Dean of the Graduate School and the Associate Dean of the Graduate School. Two members from each academic college and the interdisciplinary programs, and a representative from the Black Graduate Student Association and the UA Associated Student Government provide feedback to the deans on the needs of graduate students. Many successful initiatives for graduate students have come from the work of this active board. Students from GDSAB also sit on many University committees, providing the voice of graduate students as University policy is determined.

Graduate Student Family Picnic

To welcome our newest graduate students and their families, the Graduate School hosts a picnic early in the fall semester. The first picnic was held in September 2007, and was attended by approximately 100 people. Due to its popularity it is now an annual event held each September. Members of the Graduate Dean's Student Advisory Board host the picnic.

From Abstract to Contract: Graduate Student Research Symposium & Career Networking Event (A2C)

This was the third year for this event/project. A2C was initiated to give graduate students an opportunity to present their research here on campus in preparation for attending conferences. Because the Graduate School has a robust travel grant program, many of our graduate students will attend conferences and present research; we want to support that activity. Career Development and the Graduate School co-present this program.

This year we added two workshops to help prepare students for the competition and for subsequently presenting at a conference. These workshops were very well attended and, we believe, beneficial to students.

The A2C project is now composed of four events:
October – Workshop on How to Prepare a Research Poster
January – Workshop on How to Present Your Research Poster
Early February – Poster Competition
Late February – Career Networking Event and Awards Ceremony

Sixty-one students presented research at the poster competition, up from 31 in the previous year. Dean Geren and Dr. Brewer placed the abstracts into eleven categories, and faculty and graduate student teams evaluated each poster. This program benefits students by providing research presentation experience and having their research judged by both faculty and graduate students. Students who attended but didn't present became aware of research projects on which other

graduate students are working. We are very grateful that this year the Provost sponsored the From Abstract to Contract program.

Office of Graduate and International Recruitment and Admission

Significant Achievements and Changes

Across units:
In mid-September the offices of Graduate and International Recruitment, Admissions, Sponsored Student Programs, and Graduate Fellowships relocated to a centralized location, Stone House North. The office is a huge improvement over our old split space, allowing the offices to collaborate and support each other's efforts. This has led to improved efficiency and effectiveness and has increased staff morale.

Hosted the first annual Graduate School Appreciation Cookout and open house, April 2010. The *Collis R. Geren Award for Excellence in Graduate Education* was established by the Graduate School in honor of retiring Vice Provost for Research and Dean of the Graduate School Collis R. Geren, for his commitment to graduate education and student success. Recipients were: Faculty award, Dr. Scott Mason, Industrial Engineering; UA staff award: Ms. Nancy Sloan, Operations Management Program; and Graduate School staff award: Dean Geren. Shani Farr and Michael Rau were organizers of this event.

Overall graduate enrollment increased from 3356 in Fall 2008 to 3606 Fall 2009 (+250, 7.4%). 8.5% increase in admitted students Fall 2009 vs Fall 2010, however first time enrolled is up 20.3%, a strong matriculation rate.

Fall 2009 saw a total of 1156 international students enrolled, up from 1040 Fall 2008 (11%). Graduate students are up by 6% from 583 to 619. Undergraduate students increased by 17% from 457 to 537.

Begun in 2005 as a joint effort of IT services and the ISIS staff of the Graduate School, Phase II of the on-line application for admission went live for graduate domestic applicants in April, 2010. We continue to wait for implementation of the phase II graduate international and undergraduate international on-line applications.

Office of Graduate and International Recruitment:

- The change to the university's logo was part of the impetus for redesigning our current recruiting print pieces. A folder was designed that will be used as a foundation piece for recruiting students. The structure of the folder will allow customization by including information that is of interest to specific students or groups of students (e.g., information about a particular degree program or set of programs within a college, application information, funding information, etc.). In partnership with University Relations, we have also established a "look" for the various pieces that we use (prospectus, enrollment

guide, etc.) through the use of color and font styles. We continue to use the phrase, *"UAspire, UApply, UAchieve,"* as a brand identifier for the UA Graduate School.

- Hosted an International Transfer Student Open House for prospective students from Tulsa Community College and North West Arkansas Community College, February 27 – 28, 2010. Nineteen students toured campus, met with academic advisors, attended a mixer/dinner and a men's basketball game.
- Norfolk State University was added as a Carver institution, bringing the total to 28, a direct result of the efforts of Kendra Smith.
- The inaugural group of nine Graduate Student Ambassadors helped with various recruitment events.
- Vicky Hartwell, Director of Fellowships, added the responsibility of Associate Director of Recruitment, August 2009. Her primary responsibility is the oversight of the communication plan for graduate recruitment.

Office of Graduate and International Admissions:

- The GIAO processed 439 more applications for 2009 than 2008, an 8% increase.
- Evaluated and reorganized workflow due to the physical move to Stone House
- Cross-training efforts were initiated across the unit. International and domestic staff back up each other in generating letters, processing blue sheets, doing credential evaluations (int'l staff helping domestic) and sending missing credential emails.

Sponsored Student Programs Office:

- Fall 2009 saw a total of 137 sponsored students, up 99 from Fall 2008 (+38, 28%). Twenty seven sponsoring agencies placed students at the University, up from 23 Fall 2008. Students represent 48 countries, up from 37 Fall 2008.
- Gloria Flores coordinated the Tsunami Relief Fund Project – Fulbright Scholars Leadership Conference held January 16 -18, 2010 at the Peabody Hotel in Little Rock, Arkansas. Thirty two students attended, along with staff from the Institute of International Education, Texas A&M University, and the University of Arkansas. This is the third time the UA has hosted out of a total of five retreats held. The theme was "ACEH Fulbright Association (AFA) Understanding our History: Planning for a Better Tomorrow."
- Fall 2009 welcomed a cohort of 10 undergraduate Rwandan new freshmen as part of the Ministry of Education Presidential Scholars Program. The University of Arkansas joined a consortium of schools, led by Hendrix University, and three UA administrators, including the Director, traveled to Kigali, Rwanda, in June 2009 to participate in the selection of 52 students who were placed at eight institutions.

Admissions Activities

There are no Graduate School of Business applicants calculated into these numbers. Numbers are based on weekly admissions activity reports.

DOMESTIC ACTIVITY

	Apply	Admit	Deny	Enroll	Matriculation
Fall 2008	1726	1079	52	644	56.7%
Fall 2009	2012	1171	69	775	66.2%
Change:	+286	+192	+17	+111	
	(16.5%)	(8.5%)	(32.6%)	(20.3%)	
Spring 2009	709	501	26	315	62.8%
Spring 2010	753	550	10	355	34.5%
Change:	+44	+49	-16	+40	
	(6.2%)	(9.8%)	(-61.5%)	(12.7%)	
Summer 2009	749	545	22	363	66.6%
Summer 2010	800	584	18	405	68.76%
Change:	+51	+44	-4	+42	
	(6.8%)	(8.07%)	(-18.2%)	(11.5%)	

8.5% increase in admitted students Fall 2009 vs Fall 2010, however newly enrolled is up 20.3%. We continue to see increases in the number of admitted and enrolled graduate students for spring and summer terms.

GRADUATE INTERNATIONAL ACTIVITY

	Apply	Admit	Deny	Enroll	Matriculation
Fall 2008	1113	429	350	146	34.0%
Fall 2009	1205	436	348	177	40.5%
Change:	+92	+7	-2	+31	
	(8.2%)	(1.6%)	(-.6%)	(21.2%)	
Spring 2009	368	132	79	58	43.9%
Spring 2010	351	102	85	43	42.1%
Change:	-17	-30	+6	-15	
	(-4.7%)	(-22.7%)	(7.56%)	(-25.9%)	
Summer 2009	92	65	17	16	45.7%
Summer 2010	70	22	14	10	45.4%
Change:	-22	-13	-3	-6	
	(-24%)	(-37.2%)	(-17.7%)	(-37.5%)	

Very low matriculation rates continue for graduate international admits. Competition from other U.S. institutions, other countries, and awarding of assistantships are factors. Fall 2009 saw an increase of 92 applications (8.2%) and 31 more new enrolls (21.2%) than Fall 2008.

UNDERGRADUATE INTERNATIONAL ACTIVITY

	Apply	Admit	Deny	Enroll	Matriculation
Fall 2008	390	223	17	148	66.3%
Fall 2009	445	254	24	183	72.04%
Change:	+55	+31	+12	+35	
	(14.1%)	(13.9%)	(70.5%)	(23.6%)	
Spring 2009	174	91	11	67	73.6%
Spring 2010	134	67	6	56	83.5%
Change:	-40	-24	-5	-11	
	(-29.8%)	(-24.6%)	(-45.4%)	(-16.42%)	
Summer 2009	69	31	1	22	70.9%
Summer 2010	59	26	5	21	80.7%
Change:	-10	-5	4	-1	
	(-14.5%)	(-16.2%)	(500%)	(-4.6%)	

Overall very strong matriculation rate. Applicants, admits, enrolled up 23.6% Fall 2009. This is due, in part, to our focus on the new visiting student program.

Total applications processed per admission cycle-includes fall, spring, summer:

	2008	**2009**	**Change**
Domestic GR	3184	3565	+981 (11.96%)
International GR1573	1626	+53 (3.37%)	
International UG	633	638	+5 (.78%)
TOTAL:	5390	5821	+439 (8.0%)

- The GIAO processed 439 more applications for 2009 than 2008, an 8% increase.
- The largest numeric increase was in graduate applications which increased +381 or 11.96%

Overall graduate enrollment increased from 3356 in Fall 2008 to 3606 Fall 2009 (+250, 7.4%). There are 3397 degree seeking and 209 non-degree graduate students enrolled.

Fall 2009 saw a total of 1156 international students enrolled, up from 1040 Fall 2008 (11%). Graduate Students are up by 6% from 583 to 619. Undergraduate students increased by 17% from 457 to 537.

There were 119 countries represented on campus, up five (Armenia, Congo, Ireland, Mauretania, Norway) from the previous year. The top five countries represented are: India (178, +3), China (130, +11), Japan (108, +3), Bolivia (77, +8), and Vietnam (48).

Fall 2009 saw a total of 137 sponsored students, up 99 from Fall 2008 (+38, 28%). Twenty seven sponsoring agencies placed students at the University, up from 8 Fall 2008. Students represent 48 countries, up from 37 Fall 2008.

Staffing Changes

- Catherine Cunningham was promoted from Administrative Specialist III to Program Coordinator/Sponsored Student Programs unit. The position upgrade was approved by OHR in July, 2009.
- Vicky Hartwell, Director of Fellowships, added the responsibility of Associate Director of Recruitment, August 2009.
- Michael Rau was promoted to Administrative Support Supervisor in September, 2009 replacing Elizabeth Mitchell in the Office of Graduate and International Recruitment.
- Thuy Nguyen was hired in October 2009 as a domestic admissions analyst, replacing Sedivy Ray who was promoted to Office Manager for the Graduate School.
- Chris Serio was hired in February 2010 to replace departing Operations Management admissions analyst Mindy Schmohl.
- Hourly assistant Ms. Huong Pham left her position in Graduate and International Admissions and Sponsored Student Programs at the conclusion of her Optional Practical Training. Ms. Pham will begin graduate school Fall 2010.
- Beverly Lackey was hired in June 2010 as a domestic admissions analyst, replacing Laura Glass.
- Kaylee Simmons, Graduate Assistant, completed her M.Ed. degree in higher education in May and was hired as an academic counselor

Professional Development and Training Activities

Dylan Presley attended a two-day workshop on international student recruitment in New York City, NY in July 2009. The workshop was conducted by World Education Services.
Michael Rau, Administrative Support Supervisor, participated in the 10-week supervisor training program administered by the Office of Human Resources, Fall 2009.
Kendra Smith attended an advisor training workshop sponsored by the Center for Leadership and Community Engagement in fall 2009. The workshop assists the advisors of registered student organizations in navigating the RSA process. Kendra is the advisor to the Black Graduate Student Association.
Gloria Flores attended the Washington International Education Council (WIEC) Conference held in Washington, DC on January 25-26, 2010 for training and recruitment purposes.
Lynn Mosesso, with Dean Koski, attended the Conference of Southern Graduate Schools annual conference in Savannah, Georgia, February, 2010.

International Admissions staff members Sandye McCraw, Stacey Clay, and Alisa Wright attended the NAFSA Region III Conference in Dallas, TX, October 26-29, 2009.
In March 2010, Alisa Wright and Thuy Nguyen attended a 4-hour workshop on Dreamweaver software presented by UA IT Services.
Vicky Hartwell attended the National Association for Graduate Admissions Professionals (NAGAP) annual conference in San Francisco, CA, in April.
April 23, 2010 - Sandye McCraw, Stacey Clay, and Dylan Presley attended the Arkansas NAFSA State Meeting at Hendrix College in Conway, Arkansas. Sandye McCraw presented a session on "Resources for International Credential Evaluation."
Susan Byram, Gloria Flores, and Cate Cunningham attended the NAFSA National Conference in Kansas City, KS, June 1-4, 2010, along with other University of Arkansas international educators from the offices of International Students and Scholars, Study Abroad, and Spring International Language Center.
Lynn Mosesso and Susan Byram continue to serve on the Board of Directors for the Foundation for the International Exchange of Students (FIES).
Vicky Hartwell and Gloria Flores were elected as co-chairs of the UA Graduate Recruitment Network.
In September, 2009, Mindy Schmohl was invited to attend the Operations Management Staff Development meeting to offer input and training for admissions issues in the program.
In November, 2009, Lynn Mosesso and Vicky Hartwell presented information on admissions, recruitment, and fellowships at the semi-annual Graduate School workshop for UA faculty/staff.
In December, 2009, Lynn Mosesso, Susan Byram, Stacey Clay, Alisa Wright, and Sandye McCraw, together with International Recruiter Dylan Presley, met with representatives of Missouri Southern State University at their request to discuss international admissions procedures and staff roles. The MSSU international student population had grown significantly, and these staff members sought advice on procedures for admission, credential evaluation, transfer credit, and conditional admission.
Shani Farr gave a presentation in November 2009 to Dr. Fred Pohlman's class (Career Preparation and Development) regarding requirements for entering the Graduate School.
Kendra Smith is advisor to the Black Graduate Student Association.
Lynn Mosesso represented the Graduate School and International Education in the new Dean's search.
The Director serves on the Underrepresented Student Recruitment and Retention Committee, the Enrollment Advisory Committee, and the English as a Second Language Committee.
June 14-15, 2010, the units of International Admissions and sponsored student programs hosted a staff exchange site visit by Bao Quoc Le from Vietnam National University, wherein he was introduced to various aspects of admissions, credential evaluation, and Sponsored Student Programs.

Revenue

The sponsored student management fee generated approximately $84,700 for fiscal year 2010, up from $68,800 FY 2009.
The Director evaluated 110 international applications (down from 119 in FY 2009) for the Graduate School of Business, generating $2,750.

The Director generated an additional $750 in fees for credential evaluation services performed for the UA and NWA community.

Unit Efforts and Activities

Graduate and International Admissions:

- History scanning continues for domestic graduate admitted student files and undergraduate international students. Fall 2009 is complete with the exception of a few files remaining to be located. Spring 2010 is being pulled and will be scanned, it is anticipated, by the end of September 2010. Fall 2010 will be pulled as soon after 11th day as possible, to catch up the history scanning project as we anticipate a paperless workflow being implemented for Fall 2011 processing.
- International Admissions staff log in daily to the PHP Live Chat forum through the Office of Admissions and respond to any international inquiries.
- In November, 2009 Lynn Mosesso and Susan Byram met with Michael Freeman of ISS and representatives from the Registrar's Office and the Pat Walker Health Center to cooperatively develop procedures to help alleviate barriers to enrollment based on student non-compliance with the Arkansas State Immunization Law.
- In spring, 2010, domestic and international graduate admissions staff met with the communications disorders program, mathematics department, and the public policy interdisciplinary program to discuss and revise the application and admissions process for both domestic and international and sponsored students to this program.
- Lynn Mosesso met with College Ready staff, Department of Mathematics, to clarify and create a smooth application procedure for these non-degree graduate students.
- Revised Forms:
    - All application forms, including the Operations Management and MSE applications, were updated in October 2009 to reflect the University of Arkansas' new logo. Throughout October, all web and printed materials were updated to reflect our new address and the University's new logo.
    - Undergraduate Advising Centers form to better pull ISIS data for undergraduate international student placement into English as a Second Language courses.
    - Estimated Expenses Cost Sheet
    - Forms for applicants from China and India were updated and placed on letterhead
    - All forms, including Degree Award Notices, were updated to show our new address
- International Admissions (IAO) issues I-20s for Law School and Graduate School of Business, working with each of these units to obtain needed financial and biographical information to issue the I-20s. IAO issued 7 I-20s for incoming international law students and 29 I-20s for incoming international Graduate School of Business students.
- Mike Miller has been trained to data enter undergraduate transfer credit from universities outside the U.S.

Sponsored Student Programs:

- Coordinated a luncheon with the new Indonesian students sponsored by the Bush/Clinton Fulbright Tsunami Relief IIE/Fulbright program and the AED FORECAST-Indonesia

program. This meeting assisted these students with their transition to the UA as well as from the SILC program to academics on July 30, 2009.

- Gloria Flores, coordinated the UA-Bush/Clinton Tsunami Relief Fund Project – Fulbright Scholars Leadership held on January 16-18, 2010 at the Peabody Hotel in Little Rock, Arkansas. Cat Shock, Mike Rau, Catherine Cunningham and Dan Ferritor, Vice Chancellor for Academics of the UA System assisted in the coordination of this effort. There were at total of 42 in attendance (32 students, 2 Institute of International Education Representatives, and 8 TAMU/UA staff).
- Staff coordinated the SSP Graduation Recognition Luncheon on November 16, 2009 held at the Multicultural Center at the Arkansas Union for Fall graduates and a Dinner held on April 8, 2010 held at the Alumni House for the students graduating in Spring and Summer, 2010.
- Admissions Application Workflow procedure with International admissions and SSP was revaluated and revised prior to the start of the peak season.
- Hosted Bao Quoc Le, with the International Relations Department ECV 1000/Vietnam National University on June 14-15 along with International Recruitment and Admissions. Training was provided on sponsored student program office procedures, policies and history.

Domestic Recruitment:
Staff retreat was held July, 2009 at the Cosmopolitan Hotel.

In August 2009 Vicky Hartwell added the responsibilities of Associate Director of Graduate Recruitment to current position of Director of Graduate Fellowships:

- Oversight of communication plan for Graduate Recruitment.
- Formal role in recruiting activities.
- Supervisory responsibilities in the absence of the Director of Graduate and International Recruitment and Admissions.

The 2010 Attracting Intelligent Minds Conference (AIM Conference) was held February 18-21, 2010. The Graduate School in partnership with the BGSA hosted 11 students representing 9 institutions. The following departments contributed funds to BGSA as sponsors: The Graduate School, The Office of Diversity, Student Affairs, the Black Alumni Society, Sam M. Walton College of Business, and the department of Agricultural Economics. Two of the participants have returned as Carver students this summer and five have been accepted to UA Graduate School. Others are prospective students for Fall 2011.

Graduate Research Opportunities Forum (GROF): During March 3-5, 2010, the Office of Graduate Recruitment hosted select faculty and administrators from targeted colleges and universities during a three day event. During the event, guests had a chance to visit with their desired programs/departments of interest and learn more about UA summer research for undergraduates, the George Washington Carver Program, graduate funding and fellowship opportunities, and graduate student activities and retention initiatives. The Graduate Research Opportunities Forum was designed as a Graduate School diversity initiative. We hosted nine participants from seven different institutions.

Participant	Institution	Area of Interest
Dr. Larry Mattix	Norfolk State University	Engineering, Micro Ep
Dr. Aliecia McClain	Norfolk State University	Chemistry
Dr. Abigail Newsome	Mississippi Valley State University	Computer Science
Dr. Yolanda Page	University of Arkansas at Pine Bluff	English, Theatre, Communication
Dr. Jacques Surrency	Fort Valley State University	Crop, Soil and Environmental Science
Romelda Simmons	Fort Valley State University	Career Services
Carolyn Snell	Fort Valley State University	Career Services
Dr. Tommy Stevenson	Mississippi State University	Engineering

Open House: The Graduate Recruitment Network hosted the second annual Prospective Student Open Houses on December 3, 2009 and April 9, 2010. Shani Farr and Michael Rau were the primary organizers for both events. Attendance and evaluation averages increased. Fall 2009 Open House hosted 42 prospects from 31 institutions visiting 32 UA academic departments. Spring 2010 Open House hosted 19 prospects from 13 institutions visiting 12 UA academic departments.

Norfolk State University was added as a Carver Institution. In October, Kendra Smith visited with key representatives that were instrumental in securing a signed Carver agreement with NSU. These individuals also were invited to GROF which assisted us securing the agreement in a timely manner.

There were a total of 50 applicants with 30 of those accepted (from 11 Carver institutions) to the summer George Washington Carver Research Program. The number is up from the 17 accepted last year. (Please see 2010 GWCRP Annual Report for full details).

In an effort to reach out to the business community and participate in an event that promotes diversity, Shani Farr attended the Juneteenth Celebration at the Jones Center for Families in Springdale, Arkansas. She met several members of the business community that are interested in pursuing a graduate degree here at the University of Arkansas.

Kendra Smith and Shani Farr attended the Silas Hunt Legacy Awards celebration in Little Rock in February. This event honored four individuals that exemplify the legacy of Silas Hunt at the University of Arkansas. It was a great networking event.

Texas A&M Higher Education group. The College of Education and Health Professions hosted eight prospective doctoral students from Texas A&M University. The Graduate School provided dinner for the group. Shani Farr and Kendra Smith visited with the students to give them an introduction to the graduate school and the application process. Twostudents were in the process of completing the application by the end of the visit.

Presented seminar on “Applying to Graduate School” at the Big Event, hosted by UA Career Services. The seminar was very well attended with over 30 students.

In April, 2010, Gloria Flores conducted a Hispanic Graduate Student Focus Group meeting along with Dr. Luis Restrepo, Assistant Vice Provost for Diversity to discuss ways to improve our recruitment efforts towards prospective Hispanic students. Eight graduate students, two Graduate Student Ambassadors, and Mike Rau were in attendance.

In November, Vicky Hartwell met with GEM representative; gained access to student database.

During the spring 2010, Shannon McCarthy, a M.Ed. Higher Education student interned with the Office of Graduate and International Recruitment and Admissions. Vicky Hartwell directed her in several projects, including collecting benchmark information for graduate fellowship programs from peer institutions. Shannon also created a "Guide to Fayetteville" for incoming and current graduate students as an addition to the Graduate School web site.

Recruiters attended 58 university and career fairs and conferences from September 2009 through May 2010 versus 63 from the previous year. See attachment A.

Collectively, recruiters returned a total of 1,089 (1,353 last year) prospect cards from various recruiting trips. Of those cards, Kendra supplied 270(261Last year), Shani 361(516 last year), Vicky 377(318 last year), Gloria 132 (250 last year) and Dylan supplied 39. In total we decreased the number of prospect cards by 264 or 24.2%, as we were selective in obtaining cards from qualified prospects.

The average number of cards returned per trip was 18.78.

Recruiters rated each trip on a scale of one to five, five being high. The average rating was 3.52. The only visit to receive the lowest rating of 1 was the Alabama Connection attended by Kendra Smith. For each trip, recruiters were asked if they recommend attending again. The recruiters responded in the positive for 51 of 56 trips.

Schools/fairs/conferences that were attended this year and not last are UA-Monticello, John Brown University, University Texas-Brownsville, Oklahoma City University, Wiley College, Huston-Tillotson University, and Dillard University.

From last year, schools/fairs/conferences we did not attend were Benedict/Allen, Lemoyne-Owen, Louisiana State, Loyola/Tulane, Texas Women's University, University of Missouri, University of North Texas, WSSU.

Attended the following conferences for student recruitment purposes:

MANNRS (Minorities in Agriculture, Natural Resources, and Related Sciences) Conference
SACNAS (Society for Advancement of Chicanos and Native Americans)
National Society of Black Engineers
Society for Hispanic Professional Engineers
HBCU-UP
Southeast Region McNair Conference, Atlanta, GA.
Heartland McNair Regional Conference, Kansas City, KS
Southern Region Education Board
National Association of Black Geologists and Geophysicists

Provided cost share for faculty/staff to attend the following conferences:

National Association of Black Geologists and Geophysicists
Geological Society of America
SACNAS (Society for Advancement of Chicanos and Native Americans)
MANNRS (Minorities in Agriculture, Natural Resources, and Related Sciences) Conference

Provided funding and administrative support to the Black Graduate Student Association.

The change to the university's logo was part of the impetus for redesigning our current recruiting print pieces as well as table set up pieces for recruitment fairs:

- Fee waiver postcard text and design were updated.
- Finalized the design for floor banners; three were subsequently ordered and are in use.
- Purchased table covers with the new UA logo for recruitment event use.
- Purchased digital frames and downloaded UA photos for use at recruitment events.
- Designed and printed a table top degree program list for recruitment event use.
- Shani Farr worked with University Relations to design and print the GROF mailer and program agenda brochure.
- Kendra Smith worked with University Relations to redesign and print Carver mailer, poster, and brochure.
- Dylan Presley designed a birthday postcard to be sent to our prospect list.
- Vicky Hartwell proposed eBrochure design template to University Relations; will need software InDesign and training to add and edit text.
- Recruiting folder – This was a complete redesign of the "UAspire. UApply. UAchieve." brochure. Vicky Hartwell worked with Eric Pipkin in University Relations on the design, and submitted the text that we wanted included. The folder will be used beginning fall 2010
- Enrollment guide – Diane Cook, Susan Byram and Vicky Hartwell worked on updating the text. This has been submitted to University Relations for a re-design to conform to the colors that we have been using on our other updated publications.
- REU information card – This is in process. The web site is being updated with current information, which we want to incorporate into the card.
- Prospectus – This was updated once this year, and will be updated again. It needs a new letter from the interim dean, and new student profiles

Purchased ads in the fall and spring editions of the *Southern Diversity Schools Job Search Journal*, *The Hog Handbook 2009-2010,* Tea Rose Society annual conference brochure, and the College Town Profile/Campus Community publication.
Created an Office of Graduate Recruitment Facebook page.

Selected the first ever group of Graduate Student Ambassadors. Duties included providing campus tours, lunch with campus visitors, assisting with open house events, the Graduate Research Opportunities Forum, Attracting Intelligent Minds conference, conducting phone-a-thons, and answering prospective student questions via email.
The 2009-2010 GSA's are: Ahmed ElShafie, PHD/Space & Planetary Science; Byron Winston, PHD/Environmental Dynamics; Chase Stoudenmire, MED/Higher Education Leadership; Felysia Chatman, MS/Kinesiology; Michael Crawford, MPA/Public Administration; Paola Barriga,PHD/Biology; Shila Hawk-Tourtelot, MA/Sociology/Criminal Justice;
Taylor Johnson, MS/Counseling

Responded to requests for application and admissions information through the gradinfo@uark.edu account and our on-line information request card.

Communications

Ten communications are regularly sent to prospective students. These communications are generated by ISIS from information entered off of the prospect card or GRE scores. The cards are obtained through campus visitors, email inquiries, on-line submission, cards returned by Recruiters from various trips, phone and drop-in inquiries. GRE scores are sent to us from prospective students and automatically uploaded.
There were a total of 5,111 (6,606 last year) communications sent, a decrease of 1,495 (-23 %).
We received 884 requests for information from our on-line prospect card, down from 1,175 (-25%), with peak periods being January, February, April, and August.
Emails are sent to Master's and Doctoral prospects one day after entry. We sent 584 (639 last year) Master's emails and 90 (106 last year) Doctoral. Master's emails were decreased by 55 (-9%) and Doctoral emails by 16 (-15%) from the previous year.
We have two postcards, one listing 10 Multicultural reasons to attend the University of Arkansas and one encouraging requests for Application Fee Waivers. We sent 545 (610 last year) Multi-culture postcards and 194 (432 last year) fee waiver postcards. The Multicultural postcard decreased by 65 (-11 %); the fee waiver postcard decreased by 238 (-55 %).
405 (472 last year) letters were sent to prospective Doctoral students eligible for a Doctoral Fellowship. 1,176 (1,146) letters were sent to students that sent GRE scores or scores automatically uploaded. The Doctoral Fellowship letters decreased by 67 (-14%) and GRE letters increased by 30 (+3%).
Students who are below the undergraduate status of junior are mailed a brochure with campus information and a checklist of Graduate School preparation, research and application. We sent 483 (263 last year) of these brochures. The Self Mailer increased by 145 (+55%).
188 (65 last year) prospects that attend a GWCRP partner institution were mailed a GWCRP flyer. We increased the number of GWCRP flyers by 123 (+189%).
A Graduate School view book (Prospectus) containing information on the University as well as the application for admission and the application for assistantship were sent to 896 (1,370 last year) prospects. The prospectus mailing decreased by 474 (-35%).
We have partnered with the Fayetteville Visitor's Bureau for one mailing. We insert a letter in a Grad School envelope and deliver them to the Bureau. They then stuff the envelopes with Fayetteville Visitor Guides and mail them. Together we sent 706 (1,380 last year) Visitor Guides. The Visitor Guide mailing decreased by 674 (-49%).
In addition to the communications generated through ISIS, recruiters made follow-up phone calls and emails to prospective students.

International Recruitment Activities

<u>Sponsored Student Programs:</u>
Gloria Flores coordinated a visit from Ryan Keane, Placement Manager from LASPAU on July 13-14, 2009.
Gloria Flores attended a meeting with Dr. Findley Edwards, Associate Professor in Civil Engineering and Visiting Faculty Scholar for the Vietnamese Educational Foundation (VEF) and Lynn Mosesso on July 16, 2009 to discuss ways to effectively recruit the 2010 VEF Fellows (when selected) to apply to the UA.
As a result of a new MOU was signed in May 2009 by an Arkansas Consortium, of which UA is a member and the Student Financing Agency of Rwanda (SFAR) regarding undergraduate student placement following a Consortium delegation visit (Lynn Mosesso, Michael Freeman

and Dr. Robert Mock attended from the UA) that was held on May 26-29, 2009, there were 10 Rwandan undergraduate students placed at the UA for academic study in engineering and architecture.

The following surveys, applications, and letters of support were submitted in order to acquire degree and non-degree seeking sponsored student placements at the UA for the 2010-2011 academic year:

1. AED – Iraqi Initiative – Higher Committee for Educational Development (via Prime Minister's Office)
2. IIE/Fulbright Undergraduate Program - Africa – For degree-seeking undergraduate transfer students.
3. IIE/Study America –For degree-seeking transfer undergraduate students who are self funded.
4. IREX – Global UGRAD program – For Non-Degree undergraduate students from Eurasia and Central Asia
5. IREX – Muskie Fellowship program – For Degree and Non-Degree Graduate students from Eurasia and Central Asia.
6. World Learning- FORECAST Serbia/Montenegro - For Non-Degree undergraduate students.
7. World Learning - Global UGRAD program - For Non-Degree undergraduate students from East Asia and the Western Hemisphere.
8. Letters of endorsements
    a. AED – FORECAST/Afghanistan – Degree seeking graduate students
    b. AED – Global UGRAD – Pakistan – One term non-degree undergraduates
    c. AMIDEAST – Egypt program
    d. IIE – Global UGRAD– Pakistan – One term non-degree undergraduates
    e. American Councils – North South East Asia Program - For Non-Degree undergraduate students
    f. American Councils – North South East Asia Program (NESA) – To host the re-entry conference if the NESA grant is awarded to American Councils.

Gloria Flores visited the following U.S. based organizations and Embassies in Washington, D.C. to promote the UA's academic programs and sponsored student services provided by Spring International Language Center (SILC):

- November 2-5, 2009: Embassy of the Republic of Iraq, Royal Thai Embassy, World Learning, Embassy of Oman, The People's Bureau of the Great Socialist People's Libyan Arab Jamahiria, Academy for Educational Development (AED), International Research and Exchange Board (IREX), Embassy of the State of Kuwait, Embassy of the United Arab Emirates, and American Councils.
- January, 2010: Institute of International Education (IIE), IIE/Ford Foundation: The International Fellowships Program (IFP), IIE/Fulbright Pakistan, IIE/Bush/Clinton Fulbright Tsunami Program, Educational Attaché's Office at the Turkish Consulate, Vietnam Educational Foundation, Embassy of the Republic of Rwanda, Embassy of the Arabic Republic of Egypt, and the Saudi Arabian Cultural Mission (SACM).

Gloria Flores coordinated a site visit for the Vietnamese Educational Foundation (VEF) administrators and student scholars who will be coordinating the 8th Annual VEF Scholars Conference, which will be hosted at the UA, January 3 – 5, 2011.

International Recruitment:

Media/marketing pieces:

- Purchased ad in the 2010 edition of Keibunsha -*Japanese Study in the USA* guide
- Partnered with Spring International Language Center and purchased placement in the *Study in USA* magazine, website, and student database
- Purchased placement in the Think Education USA website, an initiative of the U.S. Department of Commerce. Worked with University Relations to create 10 minute video for this website.
- Purchased placement in the American International Education Foundation publication, website, and student database.
- Purchased a half-page ad in IIE Directory.
- Dylan Presley worked with University Relations to create a new international recruitment brochure. We hope to turn this into an e-brochure.
- Dylan Presley worked with the offices of International Students and Scholars, Study Abroad, Sponsored Students, International Admissions, and Spring International Language Center to create individual office business postcards which summarize the services offered by each office.
- Created a International Admissions Office Facebook page
- A Google translator function was added to the IAO website.
- International Alumni Guide for Panama to be used by UA Alumni Office.

Participated EducationUSA college fairs in Trinidad/Tobago, the Bahamas, Antigua, Barbados and Belize. Talked with over 1200 prospects. Fourteen new students from the Caribbean enrolled Fall 2009. We now have 58 total students enrolled, up from 44 Fall 2009.
Participated in EducationUSA college fairs in Brazil, Chile, Colombia and Panama.
Participated in the Institute of International Education university fairs in Ho Chi Minh City and Hanoi, Vietnam, in October, 2010.
Hosted the first annual International Transfer Student Open House for prospective students from Tulsa Community College and North West Arkansas Community College, February 27 – 28, 2010. Nineteen students toured campus, met with academic advisors, attended a mixer/dinner and a men's basketball game. Dylan Presley organized the event.
October 27-29, 2009 – Lynn Mosesso coordinated the campus visit from Vietnam National University HCMC representatives Prof. Nguyen Duc Nghia, Vice-President; Prof. Nguyen Hoi Nghia, Director, Department of Academic Affairs; Prof. Tran Thi Hong, Director, Department of International Relations; and Dr. Le Thi Thanh Mai, Vice-Director, Department of Academic Affairs. This delegation met with the Dean and Assistant Dean of the Honor's College, faculty from the Information Systems program, UA Chancellor David Gearheart, Provost Sharon Graber, Computer Science/Computer Engineering faculty, and Dr. Leyah Bergman-Lanier from Spring International Language Center, as well as UA Vietnamese students.

The Director attended a luncheon at the World Trade Center, Bentonville, in honor of Paul Kagame, President of Rwanda on April 29, 2010.

The Director met with a visiting delegation of faculty and administrators from Southwest Jiaotong University, China, in February, 2010.

The Director worked with the UA department of Electrical Engineering, who have signed an MOU with PSG Institute of Technology, India, in creating a 3 + 1 bachelor's degree program. The first 10 to 15 participants will enter Fall 2011.

Three academic scholarships have been awarded to international undergraduate students for the 2010-2011 upcoming academic year. One Chancellor's Scholarship was awarded to a student from India, one Honor's College Fellowship was awarded to a student from Vietnam, and one Leadership Scholarship was awarded to a student from Trinidad and Tobago. In addition, 11 Foundation for the International Exchange of Scholars scholarships were awarded to students from Albania, Ecuador, Macedonia, Zambia, Cameroon, St. Lucia, Japan, Guinea, Vietnam, Morocco, Jamaica, Nigeria, and Bolivia. The 2010 Lavallard Scholarship has been awarded to a student from Nepal.

Responded to requests for application and admissions information through the Virtual Advisor program and the iao@uark.edu account.

2009 – 2010 Goals:
It was a very productive year, with the Office of Graduate and International Recruitment and Admissions meeting the majority of its goals.

- Work toward the automation of letters to applicants and students (ongoing)
- Implement workflow scanning processes for Admissions (on target for Fall 2011)

- Continue revising the Graduate Application for Admissions and other documents as needed for the implementation of scanning (accomplished)
- Increase international and sponsored student recruitment activities (accomplished)
- Increase the number of sponsored students enrolled at the UA (accomplished)
- Increase outreach to Hispanic Serving Institutions and Historically Black Colleges and Universities (accomplished)
- Build a knowledgeable and professional recruitment team (accomplished)
- Create new and revise old printed recruitment materials (accomplished)
- Create FaceBook page for both international and domestic prospective students (accomplished)
- Create on-campus visitation program for McNair Scholars (accomplished, to be held Nov. 4-6, 2010)
    - Revise the current communication plan (ongoing)
- Continue to provide professional development opportunities to staff (accomplished)

2010 – 2011 Goals:

- Work toward the automation of letters to applicants and students
- Implement workflow scanning processes for Admissions

- Continue to ask for updates on the phase II on-line application for international graduate and international undergraduate applicants
- Revise the current communication plan
- Continue to provide professional development opportunities to staff
- Increase international and sponsored student recruitment activities
- Increase the number of sponsored students enrolled at the UA
- Increase outreach to Hispanic Serving Institutions and Historically Black Colleges and Universities
- Create a Graduate Student Ambassador website and blog
- Turn the prospectus, international admissions information piece, and international admissions packet into an e-brochure
- Begin discussions to host "Graduate Education Week" on campus, fall 2011 or spring 2012
- Have 100 attendees at our first McNair Conference in November 2010
- Survey graduate departments to determine which programs are growing enrollment. Develop a recruitment strategic plan and provide training and support to these programs.

Recommendations

The Office of Graduate and International Recruitment and Admissions continues to have a technology needs:

1. **Data related to the number of prospects, applicants, admitted students, and enrolled students to determine if there needs to be a change in the current recruiting strategy.** We need to know which states, countries, and schools are graduate students are coming from, which programs are admitting them, and if departments are admitting a diverse student population. We would help programs identify those schools that are providing them with quality enrolled students, and thereby, encourage faculty to assist in recruiting from those schools. This data would help us identify geographical areas in which we could put more effort into recruiting, as well as identify those areas that are not netting the return for the resources we are currently expending. Our unit needs a position assigned solely to our needs.
2. **A relevant website**. One of the continuing goals for this office has been updating and expanding the web site to make it more eye-catching, user-friendly, and informative. Several different staff members and student workers have been involved in this process, updating and adding to the web site. While expedient, this may not be giving us insight into what we have access to as a university and graduate school, and could incorporate into the web site to get it to be the site we envision it to be (e.g., incorporating podcasts, PowerPoint presentations, etc.). Guidance from the webmaster with respect to what can/cannot be done, and the best method for incorporating new ideas, new pages, and new technology would be helpful. Our unit needs a position assigned solely to our needs.
3. **A definite "brand."** We have had some ideas, but no consensus on what the brand should be, what it should look like, and how it should be incorporated. We started using the "UAspire. UApply. UAchieve." slogan on our pieces, and have not come up with anything to replace it yet. (Note: the use of a three-word slogan has been copied by other offices on campus.) Some of the questions to consider when formulating a brand

include: Should the "brand" incorporate the entire Graduate School, and should it be a slogan, image, and/or colors that are used on all of our promotional pieces and on the web site? We still have not identified the overarching idea or image that we want to be known for. We want it to be something that visually immediately identifies us as the University of Arkansas Graduate School, and says something about us in terms of our commitment to excellence in the service of students and the campus community.

4. **An on-line application for graduate and undergraduate international students that works.** The current on-line application will not accept the test scores that are required for admission consideration and is cumbersome and confusing, especially the payment page. Employees deal daily with questions from prospective students trying to complete the application. We have seen a decrease in the number of web application submissions, especially undergraduate, probably due to frustration in completing the form.

George Washington Carver Project

Overview

Implemented in 1997, the George Washington Carver Research Program (GWCRP) was designed to establish mutually beneficial institutional relationships with Historically Black Colleges and Universities (HBCUs), Hispanic Serving Institutions (HSIs), and Tribal Colleges (TCs) as part of the continuing effort to increase the diversity of the graduate and professional student body. This goal is realized by encouraging students at participating HBCUs, and HSIs to engage in summer research and then pursue graduate and professional degrees at the University of Arkansas Graduate School.

This year's participating institutions are as follows:

• Claflin University	1 student
• Fort Valley State University	1 student
• Grambling State University	1 student
• Huston-Tillotson University	1 student
• Philander Smith College	3 students
• University of Arkansas	7 students
• University of Arkansas, Pine Bluff	2 students
• University of Texas, El Paso	1 student
	17 Total

While on campus, each intern worked directly with a faculty mentor on a structured research project.

Application and Selection Process

The initial call for applications was sent to faculty and administrators at each of the partner institutions during the fall semester. During the recruitment season (September 2008-March 2009), Kendra Smith, Coordinator of Diversity Initiatives & Outreach and Shani Farr, Graduate

Recruiter, visited most of the participating institutions. All positions were advertised for Carver by attending Graduate School/Career Fairs and meeting with students and key administrators on each campus to provide eligible students with information about the GWCRP.

The Director of the George Washington Carver Research Program analyzed all the applications and transcripts for all departments except engineering before forwarding them to the appropriate administrator. Dr. Carol Gattis, in the College of Engineering analyzed the engineering applications before sending them to the appropriate faculty mentor. Students with less than a 3.0 GPA and 60 hours were automatically declined. Applications that progressed beyond the initial cut were sent to the department for further consideration. Of 33 applicants, 17 students were selected to participate in the 2009 GWCRP.

Implementation

The selected students arrived on May 17, 2009. As a part of the continued collaboration, the opening week activities were held with other university sponsored REU programs. These programs included Food Science, Physics, Chemistry, INBRE and Mechanical Engineering. Each program agreed to co-host the opening week activities May 17th & 18th. The welcome barbeque for the Carver/REU students was held at the University House. Additional combined activities included orientation and a welcome luncheon.

In addition to the formal research training, the Carver interns completed Carver specific assignments and participated in several co-curricular activities including a trip to the African-American Museum in Dallas, Texas to view a George Washington Carver Exhibit.

The interns participated in a weekly lecture series called Dinner & Dialogue. The series featured presentations that would either enhance their research experience while they were here or give them knowledge of graduate school preparation. The presentations and topics were as follows:

- "Just a Little Brown Spider," presented by Dr. Collis Geren, Vice Provost for Research and Dean of the Graduate School

- "Presentation Skills," presented by Dr. Lynn Meade, Professor, Department of Communications

- "Research Careers" presented by Dr. Chris Evans

- "Ethics & Research," presented by Dr. Dennis Brewer, Associate Vice Provost for Research

- "Applying to Graduate School," presented by Ms. Shani Farr, Graduate Recruiter and Ms. Vicky Hartwell, Director of Graduate Fellowships

Interns presented their research findings at the closing program on Wednesday, July 8, 2009.

Recommendations for Future Improvement

- Begin confirming departmental participation in the Carver Program in early Fall to allow the Graduate Recruitment office to recruit students during graduate school fairs at the Carver institutions.
- Budget for a Graduate Assistant specifically for the Carver Program to help with planning and other Carver activities.
- Add an activity where Carver students can interact with U of A Black Faculty & Staff.
- Pursue grant opportunities to fund more internship opportunities in disciplines that are not currently offered.
    - There was a significant decline in the number of students this year due to budget cut backs in the colleges as well as the loss of the Micro-Electronics Photonics REU.
    - Engineering & Business are the only disciplines represented this year. Those areas have not given our best yield in terms of graduate school acceptance and enrollment. We have to find a way to get disciplines such as Agriculture, Education, Music, and Biology back into the program. We had several applicants for these areas, but no funds were available to sponsor the internship.

Budget

Each participant received a $3000 research stipend, room and board, and reimbursement for travel to and from Fayetteville. Students participating in the Physics, Food Science, Mechanical Engineering, & Chemistry REU programs were compensated according to the provisions of the funding agency.

The UA graduate departments interested in mentoring a George Washington Carver intern provided the major funding for the program. Each department transferred $5,500 per intern to a Carver account established in the Graduate School. The departments with established REU programs were responsible for the expenses associated with their students.

Graduate Fellowships

In fall 2009, 21 new graduate students accepted the offer of the Distinguished Doctoral Fellowship; 17 were Walton-funded, 2 were non-Walton funded, and 2 were supported by named endowed funds. The total enrollment of distinguished doctoral fellows during fiscal year 2010 was 50; 39 were Walton-funded, 7 were non-Walton funded, and 4 were supported by named endowed funds.

There were 50 new Doctoral Academy Fellows; 42 were Walton-funded, 5 were non-Walton funded, and 3 were funded by named endowed funds. There were a total of 181 doctoral academy fellows; of whom 11 were non-Walton funded, and 14 were supported by named endowed funds.

In an effort to mitigate the effect of the economic downturn on the doctoral fellowship program, approval was sought and received to move $1 million in surplus earnings from the Distinguished Doctoral Fellowship spending account to the Doctoral Academy Fellowship spending account.

With this transfer of funds, departments/programs will be able to continue recruiting well-qualified students into their programs by nominating them for a Doctoral Academy Fellowship. The Director of Graduate Fellowships continued to post, and monitor the disbursement of, the fellowships from ISIS (the Integrated Student Information System) to the students.

Improvements to the delivery of the fellowships to the students continue, with the assistance of other offices on campus, most notable the Treasurer's Office.

Caliber of Students

Distinguished Doctoral Fellows continued to be from the top 1% of all students who attend graduate school. Likewise, Doctoral Academy Fellows were from the top 5% of all students who attend graduate school. The fellowships were a key component in attracting top graduate students to the University of Arkansas. This year's doctoral fellows came not only from institutions in surrounding states, such as the University of Missouri – Kansas City and the University of Nebraska, but also from such institutions as the University of Notre Dame, Purdue University, the University of California – Berkeley, Columbia University, Brigham Young University, Southern Methodist University, the University of Florida, the University of Georgia, and the University of Miami. International doctoral fellows were recruited from Bangladesh, Bulgaria, China, India, Korea, Malaysia, Nigeria, Sweden and Vietnam.

The academic caliber of our doctoral fellows is also evident in their ability to secure outside funding. Benjamin Newton, a Distinguished Doctoral Fellow in Micro-electronics Photonics, was also awarded a fellowship through the Science, Mathematics And Research for Transformation (SMART) Scholarship for Service Program and another fellowship by the SREB-State Doctoral Scholars Program. Royce Floyd, a Distinguished Doctoral Fellow in Civil Engineering was awarded the ACI Presidents' Fellowship for 2009-2010. Aaron Russell, a Doctoral Academy Fellow in Chemical Engineering, was awarded a Graduate Research Fellowship by the National Science Foundation. Julius Morehead, a Doctoral Academy Fellow in Mechanical Engineering was awarded a fellowship by the National Consortium for Graduate Degrees for Minorities in Engineering and Science, Inc. (GEM). Ethan Morton-Jerome, a Doctoral Academy Fellow in Anthropology, spent several weeks during summer 2010 studying Arabic in an intensive language training program as part of the U.S. State Department's Critical Language Scholarship program. Only 575 undergraduate and graduate students were chosen on the basis of academic merit from nearly 5,300 applicants.

Distinguished Doctoral Fellow Stuart Buck (Education Reform) published a book, *Acting White: The Ironic Legacy of Desegregation.* Distinguished Doctoral Fellow Daniel Slater (Management) accepted a position at Union University. Distinguished Doctoral Fellow Robert Bauer (History) accepted a position at Flathead Valley Community College. Distinguished Doctoral Fellow Joseph Agan (Rehabilitation) accepted a Visiting Assistant Professor position with the University of Arkansas. Distinguished Doctoral Fellow Heath Schluterman (Chemical Engineering) accepted an Instructor position with the University of Arkansas. Letitia Pohl, a Doctoral Academy Fellow (Industrial Engineering) accepted a Research Associate position with the University of Arkansas.

Doctoral Visit Fund

The dedicated doctoral visit fund allowed the Graduate School to assist departments in bringing 25 prospective doctoral students to campus. The visits aid in the recruiting effort for the Distinguished Doctoral Fellowship and Doctoral Academy Fellowship. The fund provided an opportunity for students and faculty to visit, for students to view the campus and its facilities and to tour Fayetteville and the larger Northwest Arkansas area. The visits were especially beneficial for students who had never been to the campus and surrounding area. Nine of the visiting students accepted either a Distinguished Doctoral Fellowship or Doctoral Academy Fellowship for fall 2010.

Graduate Student Travel Grants

The graduate student travel grant program continued to be an integral part of recruiting and retaining talented graduate students. Students used these travel grants to attend conferences in 34 states and the District of Columbia, and international conferences in Canada, Europe, Asia, Central America, and South America. These travel grants allowed several of our outstanding doctoral students to take advantage of opportunities to present their research. Abigail Hubbard, a doctoral academy fellow in chemistry, was selected as a young researcher to attend the 60th Interdisciplinary Meeting of Nobel Laureates at Lindau, Germany. She was chosen in the top 500 of the 20,000 applicants to attend the meeting. Hugh Medal, a doctoral academy fellow in industrial engineering, was one of only 20 students nationwide selected to present their research at the fourth annual Department of Homeland Security's University Network Summit. Christopher Angel, a doctoral academy fellow in environmental dynamics, presented his research on the Bedouin city of Um Sayhun, Jordan, at the World Archaeological Congress in Dublin, Ireland.

The maximum reimbursable amount for master's and Educational Specialist (Ed.S.) travel grants was $600, and the maximum reimbursable amount for doctoral participant and doctoral presenter grants remained at $1,000. For fiscal year 2011, the travel grant award amounts will remain at the same level.

A total of 593 travel grants were funded during the fiscal year. A comparison of the seven years of the travel grant program is shown in the table below:

Fiscal Year	Amount Expensed	Total Grants Awarded	Total Grants Expensed	Average Trip Expense
2010	$478,627	608	593	$807
2009	$423,369	569	541	$783
2008	$344,069	454	423	$813
2007	$330,362	435	418	$790
2006	$293,610	391	365	$804
2005	$360,000	441	441	$816
2004 (Aug-June)	$237,032	321	321	$738

Three categories of travel are offered to graduate students: master/Ed.S., doctoral participant, and doctoral presenter. Students may apply for and be awarded one travel grant per year (July

1-June 30). Master/Ed.S. students who are awarded a travel grant are required to present a formal paper or poster. Alternate types of presentations, e.g., oral presentations of original work that may be appropriate to the student's degree program, are reviewed on a case-by-case basis. Doctoral students may apply for a participant travel grant during the first year of their academic program. This travel grant does not require the student to present research, but it does offer the student the opportunity to network and learn more about the chosen field of study. Doctoral students may also request a presenter travel grant, with the intent to present research at a professional meeting/conference. The student must be a named author and the sole presenter at the conference. The research must carry the name of the University of Arkansas. The distribution of the types of travel grants that were expensed during the past seven fiscal years is shown below.

Trip Type	**FY2010**	**FY2009**	**FY2008**	**FY2007**	**FY2006**	**FY2005**	**FY2004**
Master/Ed.S	188	189	106	90	91	176	135
Doctoral Participant	81	53	50	69	70	89	46
Doctoral Presenter	324	299	267	259	204	176	140
Totals	**593**	**541**	**423**	**418**	**365**	**441**	**321**

Graduate students in six colleges and more than 50 degree programs, including the interdisciplinary programs administered by the Graduate School, took advantage of the travel grant awards during the fiscal year:

COLLEGE	**MASTER/ED.S. AWARDS**	**DOCTORAL PARTICIPANT AWARDS**	**DOCTORAL PRESENTER AWARDS**	**TOTALS**
AFLS	45	5	48	**98**
ARSC	82	24	137	**243**
EDUC	21	19	25	**65**
ENGR	20	14	46	**80**
INTER	3	10	43	**56**
LAW	7	0	0	**7**
WCOB	10	9	25	**44**
TOTAL	**188**	**81**	**324**	**593**

All graduate students who are awarded travel grants are expected to be full-time students during the semester the travel occurs. The number of fellowship recipients, graduate assistants, and regular full-time graduate students whose travel was expensed in 2009 is listed below.

Student Type	Master/Ed.S. Travel Grant	Doctoral Participant Travel Grant	Doctoral Presenter Travel Grant	Total
Distinguished Doctoral Fellow	0	11	20	**31**
Doctoral Academy Fellow	0	23	81	**104**
Other Fellowship	17	3	13	**33**
Graduate Assistant	129	36	188	**353**
Full-time Graduate Student	42	8	22	**72**
Total	**188**	**81**	**324**	**593**

Southern Regional Education Board (SREB) -- State Doctoral Scholars Program

In fiscal year 2010, two new SREB scholars began their programs, keeping the total number of currently enrolled SREB-funded doctoral scholars at 13. There were six male and seven female SREB doctoral scholars. The programs of study they were enrolled in are Public Policy (7), Anthropology (1), Biological Engineering (1), Mathematics (1), Counselor Education (1), Microelectronics-Photonics (1) and History (1). One former SREB scholar in Environmental Dynamics completed his degree in December 2009. The SREB scholar in History will be transferring from the University of Arkansas to the University of Arizona, where there is greater support for the student's research area.

Students who are awarded this funding must be from a racial/ethnic minority (including Native Americans, Hispanic/Latino Americans, Asian-American and African-American), and they must plan to become a full-time faculty member in a postsecondary institution upon completion of the doctorate. The program seeks to increase the diversity of faculty in postsecondary institutions by aiding students to pursue and complete the doctoral degree. It is anticipated that the University will add two more SREB-State Doctoral Scholars in fall 2010.

The University of Arkansas reserved a table at the SREB/Institute on Teaching and Mentoring, held in October 2009, in Arlington, VA. The table was staffed by Dr. Charles Robinson, Vice Provost for Diversity, Ms. Kendra Smith, Coordinator of Diversity Initiatives and Outreach and Director of the George Washington Carver Research Program, and Ms. Vicky Hartwell, Director of Graduate Fellowships and Associate Director of Graduate Recruitment. This conference provided an excellent opportunity to recruit future minority faculty members to the university, and to recruit graduate students. Participation as a recruiting institution also gave the university 12 months of access to the SREB scholar data base, which lists those doctoral scholars who have or will shortly receive a Ph.D.

Benjamin Franklin Lever Tuition Fellowships

The Benjamin Franklin Lever Tuition Fellowship program is intended to increase diversity within graduate degree programs on the University of Arkansas-Fayetteville campus. Census data from the State of Arkansas is used as a benchmark to assist in determining diversity needs within specific degree programs. The fellowship supports those graduate students who are fully admitted into an on-campus degree program, but for whom tuition funding via a graduate assistantship or similar position is not available. This lack of departmental support may be due to limited departmental resources or because the structure of the degree program does not allow this option (e.g., the Master of Arts in Teaching program).

Funding allocated for the Benjamin Franklin Lever Tuition Fellowship program enabled the Graduate School to award tuition support to 66 graduate students across 28 degree programs during fiscal year 2010. The students supported by the fellowship included 38 new recipients and 28 students continuing on the fellowship from previous years. The distribution across degree programs was:

Degree Program	**Doctoral**	**Master's**	**Ed.S.**
Agricultural Economics		7	
Anthropology	1		
Childhood Education		1	
Communication Disorders		1	
Counseling/Counselor Education	5	2	1
Curriculum and Instruction	1		
Drama		1	
Educational Administration		1	
English		2	
Environmental Dynamics	1		
Geography		1	
Health Science	1	6	
History		1	
Horticulture		1	
Human Environmental Sciences		1	
Information Systems		1	
Kinesiology		17	
Operations Management (on-campus)		1	
Philosophy	1		
Political Science		1	
Public Administration		1	
Public Policy	2		
Rehabilitation		1	
Secondary Education		1	
Sociology		1	
Vocational Education	1		
Workforce Development (formerly Adult	2	1	

Education)			
Totals	**15**	**50**	**1**

Of the 66 awardees, 39 (59%) were female and 27 (41%) were male. The distribution of awardees based on ethnicity and gender is shown in the table below:

ETHNICITY	FEMALE	MALE	TOTAL
Asian	4	5	9 – 13.64%
African American	18	13	31 – 46.97%
Hispanic/Latino	1	1	2 – 3.03%
American Indian/ Alaska Native	2	2	4 – 6.06%
Caucasian	14	6	20 – 30.3%
Total	39	27	66 – 100%

During the year, three Lever fellows were awarded graduate assistant positions, freeing up Lever funds that were awarded to other Lever applicants. Eleven Lever fellows graduated with the following degrees during the academic year:

PROGRAM	DOCTORAL	MASTER'S
Childhood Education		1
Health Science		2
Information Systems		1
Kinesiology		4
Public Administration		1
Secondary Education		1
Workforce Development	1	

For students who do not have other financial resources, the Benjamin Franklin Lever Tuition Fellowship remained a valuable resource for beginning or continuing in their graduate studies.

Other Fellowships

The Graduate School offers $3,000 supplemental fellowships to assist in recruiting and retaining students to the Master of Fine Arts programs in Art, Creative Writing, Drama, and Translation. Eighteen new students qualified for and accepted these fellowships in fiscal year 2010, bringing the total number of M.F.A. graduate fellows to 48. Two of the new fellows, one in Art and one in Drama, are also Fulbright scholars.

The graduate student in Entomology who is funded by the Harry & Jo Leggett Chancellor's Fellowship completed her second year of eligibility. This fellowship is awarded to a doctoral student for a maximum of four years.

During fiscal year 2010, Ms. Vicky L. Hartwell continued in her role as Director of Graduate Fellowships, and accepted additional duties as Associate Director of Graduate Recruitment as of

August 1, 2009. For significant accomplishments and goals related to those duties, please see the report from Ms. Lynn Mosesso, Director of Graduate and International Recruitment and Admissions.

In the 2009-2010 year Ms. Hartwell

- Administered the Distinguished Doctoral Fellowship, Doctoral Academy Fellowship, and Graduate Fellowship for Master of Fine Arts programs: reviewed nominations, made recommendations for awards, sent award packets, posted fellowship amounts to ISIS, adjusted awards when necessary, worked with financial aid counselors to resolve any questions regarding fellowships, tracked expenses to earnings for accounts, identified endowed accounts with adequate funding to award.
- Was interviewed for a video about the Distinguished Doctoral Fellowship program, which was submitted to the Walton Family Charitable Trust.
- Created and populated an Access data base with information about all Distinguished Doctoral Fellowship and Doctoral Academy Fellowship recipients to allow tracking and reporting of retention and completion data.
- Administered the Graduate Student Travel Grant program: reviewed and approved applications, entered into Access database, sent award notifications, approved expense transfers processed by Ms. Erica Yeung, tracked expenses to earnings for account.
- Revised the travel grant application form to offer students and departments the option of receiving notifications via email. Previously, all notifications had been printed and sent through campus mail. It is expected that this option will save both time and money, and contribute to the university's efforts regarding sustainability.
- Administered the Benjamin Franklin Lever Tuition Fellowship program: reviewed nominations once per semester, made recommendations for awards, sent award packages, coordinated tuition payment with Ms. Paula Lasner, tracked expenses to allow maximum number of fellowships to be awarded.
- Administered the Southern Regional Education Board (SREB) – State Doctoral Scholars Program: reviewed enrollment compliance, coordinated tuition and fees payment with Ms. Paula Lasner, posted fellowship awards to ISIS when funding switched from SREB to Graduate School match for students in interdisciplinary programs, attended SREB fellows luncheons.
- Presented two sessions at Graduate Orientation on fellowships, graduate assistantships and travel grants.
- With the assistance of Ms. Diane Cook, scheduled and planned luncheons for SREB scholars (fall and spring).
- Attended the SREB/Compact for Faculty Diversity Annual Institute on Teaching and Mentoring in Arlington, VA.
- Participated in the fall and spring Open Houses held by the Office of Graduate Recruitment.
- With the assistance of Ms. Diane Cook, planned the receptions for the Distinguished Doctoral Fellows and Doctoral Academy Fellows that were held in spring 2010.
- Participated in the Graduate Research Opportunities Forum organized by the Office of Graduate Recruitment.
- Attended the National Association of Graduate Admissions Professionals (NAGAP) conference in San Francisco.

- Participated in the all-university commencement.

Program Assessment

The Office of Program Assessment conducted three program reviews during the 2009-10 academic year. The PhD in Public Policy held its site visit during the fall 2009. During the spring 2010, the BSE, MS and PhD in Kinesiology (Non-Teaching), the BSE in Human Resource Development, and the MED, EDD in Workforce Development Education (Non-Teaching) were conducted. All program reviews were completed with response documents approved by May 2010. One member from the University Program Review Committee participated as the faculty representative on each review. Their time and support was invaluable.

The Office of Program Assessment and a representative from the University Program Review Committee also participated in the BSA, MS and PhD program reviews for the Crop, Soil and Environmental Sciences Department directed by the University of Arkansas Division Of Agriculture. The review committee report has been received and the departmental response is anticipated to be completed in June 2010. Six other reviews were delayed due to various circumstances and will be conducted at a later date. Currently there are 12 reviews scheduled for the 2010-11 academic year.

The director of the Program Assessment Office and Associate Dean Charles Adams of the Fulbright College of Arts and Sciences continued to co-chair an effort addressing the Higher Learning Commission's (HLC) concern that the "University Core" criteria needed updating and student learning assessment included within the process. In May 2009, the University Faculty Senate approved an update to the "University Core" area goals, objectives and outcomes. Working groups were formed consisting of the faculty responsible for teaching the "Core" courses during the summer of 2009 to develop course objectives, expected outcomes, assessment methods and feedback processes that tied back to the area goals, objectives and outcomes already approved. A standard report format was developed and utilized. The faculty working groups completed their task by October of 2009 and several courses were able to initiate assessments during the fall 2009 semester. All other courses were expected to initiate assessment processes as soon as possible. Depending on the feedback structure, course assessments and outcomes were provided to the teaching faculty. Examples of the assessment techniques, outcomes and changes, if any, are to be reported to the University Core Committee during the 2010-11 academic year.

In July 2009, all colleges submitted a Student Academic Achievement and Degree Program Outcomes report as required by Academic Policy 1630.10. A new campus wide format has been suggested and is in the final stage of review. As a first trial, a feedback document similar to a format utilized by the Walton College of Business was used to provide feedback information to the graduate interdisciplinary programs within the Graduate School. The interdisciplinary program directors found the document useful and did not suggest any changes. The Walton College of Business will receive the next round of feedback information during the summer of 2010. The Fulbright College of Arts and Science will be split into subject matter areas with each area receiving separate reports. These activities are planned for the 2010-11 academic year.

Additional activities performed by the Director of Program Assessment were to serve as Secretary for the University Course and Programs Committee (UCPC) which meets once per month, and to prepare documentation for the Faculty Senate agenda from the UCPC and the Graduate Council.

Public Policy Ph.D. Program

Executive Summary

The 2009-10 academic year was characterized by many customary programs and practices such as seminars, qualifying exams, dissertation defenses, and research and professional development (RPD) seminars. The public policy program review was conducted in 2009-10. The program continues to receive a large number of applications for admission. Students in the program continue to publish manuscripts in peer-reviewed academic journals and present many papers at international, national, and regional conferences (see Appendix). Students exiting the program continue to be placed in excellent positions.

A new specialization, Policy Studies in Aging, became operational in fall 2009. A new public policy research methods course, special topics in mixed methods, to be offered in fall 2010, will help to make our students better prepared in the area of research design/methods and more competitive on the academic job market. In order to increase the quality of students in the program, the admissions process continues to be increasingly selective. For example, effective fall 2010 the minimum GPA for program admission will be increased from 3.0 to 3.2. The program has also adopted new policies to require a formal dissertation defense for all Ph.D. candidates and to implement fall-only admissions.

Student Enrollment, Admissions, and Support

The program enrolled 65 students in 2009-10. Enrollment continues to be diverse (see Table 1 below). The program receives many applications, the majority of which are turned down due to student qualifications, administrative capacity, and/or lack of fit. The acceptance rate for 2009-10 was 43 percent (10 out of 23 applicants). Of these 10 applicants, 6 have committed to fall 2010 enrollment. The acceptance rate for the previous academic year, the last year during which the program offered the option of spring and fall admission, was 44 percent (16 out of 36 applicants). During 2009-10 the program enrolled 27 full-time students and 38 part-time students. Of the 27 full-time students, 4 are on self-support, 8 are on university assistantships, 10 are on other U. S. support (e.g. SREB Fellowships and grants), and 5 are on non-U.S. support. All 38 part-time students are on self-support.

Table 1. Breakdown of Active Students by Sex and Race/Ethnicity, 2009-10

	Female	Male	Total
African American	11	5	16
Asian American	0	0	0
Latina/Latino	1	1	2
Native American	1	1	2
International	5	7	12
White (non-Latina/Latino)	24	9	33
Total	42	23	65

Program Changes/Activities/Needs

The Future of the Program - Efforts by the Graduate School to increase administrative support for the policy program in 2007 have helped the program take steps toward the goals of achieving greater prominence and recognition. In addition, the program administration will continue to recruit new PUBP faculty members, strengthen the curriculum, be more selective in the admissions process, and develop strategies for placing program graduates in faculty positions at regional colleges and universities. The program administration will also continue to encourage growth and development in the area of faculty-student research collaboration.

The 2009-10 program review recommends a number of strategies for program improvement/maintenance. The program administration will address the following recommendations during the 2010-11 academic year in an effort to have strategies/changes in place by fall 2011. The strategies/changes are:
(1) change the essay admission guidelines to require that the essay address a policy problem/issue in a *research context*;
(2)explore the possibility of requiring the GRE exam for admission;
(3) advanced PUBP students will be invited to address and participate in the pro-seminar class (PUBP 6001);(4) provide all PUBP graduate assistants with office space;
(5) update and improve website in an effort to provide timely program information/announcements;
(6) restructure specializations in an effort to reduce the total number and eliminate inactive/less active specializations; and
(7) continue to develop mechanisms for encouraging faculty-student research collaboration.

New Specialization in Policy Studies in Aging – The new specialization in Policy Studies in Aging went into effect in fall 2009. The specialization coordinators are Professor Barbara Shadden (Rehabilitation, Human Resources & Communication Disorders/Office of Aging Studies) and Professor Jean Turner (Human Environmental Sciences). Specialization faculty members are: Professor William C. Bailey (Human Environmental Sciences), Professor Ro Di Brezzo (Kinesiology), Professor Jean Henry (Kinesiology, Recreation, and Dance), Professor Tim Killian (Human Environmental Sciences), and Professor Brent T. Williams (Rehabilitation Education and Research). Currently, members of the specialization faculty and students are working with state representatives to begin mapping those state policies related to the aging population of Arkansas.

Graduate Assistantships – The external program reviewers recommend increasing the number of graduate assistantships from seven to 15. Implementation of this recommendation would help with recruiting and student support—and the program would benefit from a higher ratio of full-time to part-time students.

Specialization Activity/Changes – The program administrators review existing specializations on a continuing basis to determine if they are still adequately staffed and in demand. The ability to create new specializations and allow others to go dormant is a strength of the policy program's design. This flexibility allows administrators to respond to changing needs. The addition of Professor John Gaber to the Community Development specialization faculty, has allowed the program to resume consideration of applications to this specialization. The Education Reform Department's Education Policy Ph.D. program went into effect in fall 2009. In anticipation of this change, the program administrators replaced the education policy specialization coordinator, Professor Gary Ritter (Department of Education Reform), with two new specialization coordinators. Professor Tom Smith is the specialization coordinator for education specialization students in the K-12 area. Professor Mike Miller is the specialization coordinator for education specialization students in the Higher Education/Administration area.

Health policy is still an area of great demand, but the program continues to lack faculty resources to adequately staff this specialization. The new specialization in Policy Studies in Aging will help to meet some of this demand; however, PUBP faculty may wish to consider the possibility of eliminating the health policy specialization.

The Department of Criminal Justice at UALR has established a new Ph.D. in Criminal Justice, effective fall 2010. Since the inception of PUBP in 1999, the Criminal Justice specialization has relied heavily on UALR for faculty resources. Because continuation of this relationship is no longer feasible, and because we do not have enough faculty at UAF to support a specialization in Criminal Justice, PUBP no longer accepts applications for this specialization.

The American Review of Politics - The public policy program continues to be a major supporter of this quarterly, peer-reviewed journal. Specialization faculty members and advanced Ph.D. students are frequently asked to review manuscript submissions in their policy areas.

Information regarding Public Policy students may be found in a restricted access addendum to this report.

Microelectronics-Photonics Graduate Program

1. **Progress and accomplishments related to strategic plans and university priorities and goals:**

    a. The following items were recommended by the microEP Graduate Program external reviewers in spring 2007, with current status on each recommendation added:

- *Budget increases to support 5-10 TA positions, travel, and events.* The budget for these items has not changed, and remains fixed at two fully funded 50% TA positions and a maintenance budget of $250 per enrolled student in the prior academic year's fall semester.
- *Continued budget support of Director and Program Specialist's salary, and create new budget to support an Assistant Director.* The Director's 9-month position continues to be funded 4.5 academic months by Fulbright, 4.5 academic months by Engineering, and 1.0 summer month by the Graduate School. It is suggested that the Director's position return to a 12-month appointment because of the year-round activities in support of the 48 enrolled graduate students and new responsibilities as the building administrator of the new NANO building. The Program Specialist 12-month appointment salary continued with 4 months of support each from Fulbright, Engineering, and Graduate School. Two months of summer funding that was started in the 2007-08 academic year has continued to distribute to the three Assistant Directors in recognition of their microEP service obligations.
- *Improved faculty participation in active governance, and distribute management of some program elements to the core faculty members.* The management is now distributed, but even with this increased level of management effort general faculty involvement in active governance continues at a minimal level for routine issues. Without direct microEP input into the faculty reward and recognition process this is unlikely to change.
- *Improved communication between Director and partner department's faculty.* Panneer Selvam, Civil Engineering and microEP Assistant Director is responsible for scheduling in-person reports to ChE, Chemistry, EE, ME, BENG, and Physics faculty meetings at least once per year, with a goal of reporting once per semester. The infrequency of faculty meetings in these departments (and subsequent packed agendas) is a large barrier to communicating with the partner departments' faculty members.

b. Significant microEP Director and staff time during this year has been spent in support of the new NANO building final interior space design and construction, as microEP is moving into the building as its administrative organization.

c. Matt Gordon (ME) resigned as microEP Assistant Director upon his assignment as interim ME Department Head and Keith Roper (ChE) accepted that microEP position as of January 2010. This created some secondary project delays as the new administrative team concentrated on critical path items during this transition period.

d. Eighty-four students have completed their MS microEP degrees through May 2010 (including four in the AY 2009-2010)
   - Twenty continued into the PhD microEP program (24%): eleven PhDs completed, nine currently enrolled
   - Sixty-two male (74%): ten Black, forty-three Caucasian, and nine Asian
   - Twenty-two female (26%): five Black, eleven Caucasian, and six Asian
   - Fifteen Black (18%), fifty-four Caucasian (64%), and fifteen Asian (18%)
   - Three Hispanic (4%)

- Thirty-eight US Citizen or Permanent Resident (45%)
- Sixty-nine MS degrees were thesis-based (82%)
- Forty-seven student's prior traditional degree did not match the departmental affiliation of his or her major professor (56%)
- Thirty-three student's theses were based on nanoscale research (39%)
- Departmental affiliation of student's major professor: BAEG (1), BioMed (1), ChE (6), Chemistry (2), Civil Eng (2), CSCE (1), EE (28), ME (11), Physics (30), not assigned non-thesis (2)

e. Thirty-two PhD students have graduated through May 2010 (including two in the AY 2009-2010)
   - Twenty-seven male (84%): four Black, eighteen Caucasian, and five Asian
   - Five female (16%): one Black, three Caucasian, and one Asian
   - Five black (16%), twenty-one Caucasian (66%), and six Asian (19%)
   - Zero Hispanic
   - Sixteen US Citizen or Permanent Resident (50%)
   - Seventeen student's prior traditional degree did not match the departmental affiliation of his or her major professor (53%)
   - Eleven entered MS/PhD program with a BS degree (34%), twenty-one entered PhD program with non-microEP MS degree (66%)
   - Twenty-two student's dissertations were based on nanoscale research (69%)
   - Departmental affiliation of student's major professor: ChE (2), Chemistry (2), EE (8), ME (7), and Physics (13)
f. Forty-nine students were enrolled in the spring 2010 semester
   - Thirteen MS only (27%), thirteen MS on PhD path (27%), and twenty-three PhD beyond the MS degree (47%)
   - Forty-four male (90%): four Black, thirty-six Caucasian, and four Asian
   - Five female (10%): one Black, four Caucasian, and zero Asians
   - Five black (10%), forty Caucasian (82%), and four Asian (8%)
   - One Hispanic (2%)
   - Twenty-seven US Citizen or Permanent Resident (55%)
   - Thirty-five student's prior traditional degree did not match the departmental affiliation of his or her major professor (71%)
   - Thirty-one student's thesis or dissertation topic is based on nanoscale research (63%)
   - Departmental affiliation of student's major professor: ChE (1), Civil Eng (1), EE (15), ME (13), and Physics (19)
   - Student stipend support: eighteen RA (37%), eight state TA (16%), three Federal Fellowships (6%), nine NSF S-STEM (18%), six part-time students with company reimbursement of tuition (12%), and five self-funded (10%).
g. One hundred eighty students have entered the microEP graduate program through Cohort 12 (June 2009 – May 2010) with an overall retention rate of 83.9% to date
   - Ninety-eight students have left the UA with one or more microEP graduate degrees
   - Forty-nine students were enrolled in the spring 2010 semester: thirteen MS only, thirteen MS on PhD path, and twenty-three PhD beyond the MS degree
   - One student is on military Educational Leave of Absence, and four are "everything but thesis"

- Twenty-eight students exited prior to completion of a microEP degree: twenty for transfer to a traditional graduate program, five for academic reasons, two for personal reasons, and one because of death

h. The microEP program's expenditures from the MEPH TELE fee account during this academic year included:
   - Materials and Supplies for the course MEPH 5873 Fabrication at the Nanoscale (Physics small substrate processing facility)
   - Materials and Supplies for the courses ELEG 4223 Design and Fabrication of Solar Cells, ELEG 5243L Microelectronics Fabrication, and ELEG 5293L Integrated Circuit Fabrication Lab (HiDEC processing facility)
   - One departmental share of the license cost for the Knovel reference book database
   - Student stipend for microEP website redevelopment for microEP student management laboratory use (currently staffed by a MS Comp Sci student)
   - Assorted software licenses for students as needed to meet the educational requirements of the microEP grad program

i. The microEP Industrial Advisory Committee (IAC) met in October 2009, with the focus of the meeting on the new Institute of Nanoscale Material Science and Engineering and the role microEP will play as administrative center of the new NANO building. Current outstanding proposals for a new microEP REU site and for Professional Masters Degree development were also discussed. Feedback from the IAC was very supportive of our overall academic directions, with suggestions for minor evolutionary changes to embed the professional knowledge and skills needed by today's graduates into the program.

j. The new undergraduate minor in Microelectronics-Photonics (started fall 2007) has graduated two students, and will have at least five students enrolled in the fall 2010 semester.

k. A reunion for all microEP students and alumni has been announced for June of 2011, with it having a dual purpose of bringing our early alumni into contact with current students and to act as a belated housewarming even for the move of the microEP Graduate Program into the new Nanoscale Materials Science and Engineering (NANO) Building early in 2011. If the NIST proposal is funded then this event will be delayed until June of 2012 (after NANO building occupancy in November 2011).

2. New Initiatives to support teaching and research

a. Ken Vickers initiated in summer 2009 an effort to create a Graduate Certificate in Management of Technology-Based Organizations. Discussions with the Management Department of the Walton College of Business, the Office of Technology Licensing, and Industrial Engineering led to the definition of a Graduate Certificate in Management that was approved for implementation with the 2010-2011 Graduate Catalog.

b. A NSF Partnership for Innovation proposal with Ken Vickers as PI was under development for December 2009 submission. The focus was to be on building on the entrepreneurial culture formed here under the two prior PFI grants to reward commercialization efforts of faculty arising from traditional research grants. The NSF pulled the solicitation just before the letter of intent deadline for a detailed program review, but discussions continued with UA central administration and outside partners such as the ASTA and the Arkansas Research Alliance. The PFI solicitation has now

been re-issued as NSF 10-581 with a different focus, but one that fits the microEP emphasis on research commercialization. This new solicitation will be pursued in fall 2010 with microEP alumni in small technology companies for December 2010 submission.

c. A NSF Research Experience for Undergraduate (REU) Site proposal was submitted for the microEP graduate program by Ken Vickers (PI) and Rick Ulrich (Co-PI). The proposal was funded for three years to support ten students on campus each summer for ten weeks.

d. A NSF Science Masters Program (SMP) proposal was submitted for the microEP program by Ken Vickers (PI), Shannon Davis (Co-PI), and Phil Stafford (Co-PI). The proposal was not funded, but it will provide the base document used to create an application to be accepted as a Professional Science Masters (PSM) program by the Council of Graduate Schools.

3. Benchmarking evidence

a. Three of the five graduating students in this academic year were given exit interviews. No issues surfaced during the interviews that had not already been identified during last year's exit interviews.

b. A survey form to assess student performance in their final thesis or dissertation preparation and defense continued to use the graduating students as "sensors" to assess the program's ability to meet its educational goals. While data from its use over the last two years continues to be inconclusive due to the high level of assessment scatter among each student's committee members, that scatter is in itself an interesting topic. Understanding the variation in assessment standards among faculty from the various sister departments of the microEP grad program could be a key to increasing faculty participation in the program. Note: This information is not shared with the student, only used by the microEP management team for program assessment.

4. Achievements in teaching, research, and public service that would not have occurred without the existence of the interdisciplinary program:

a. The following grants and awards all are based in the interdisciplinary microEP graduate program as the educational program that supports the research, training, management, or educational mission of the grants. The role of microEP in each grant is indicated below:

1999			
NSF IGERT:	Schaper, Salamo	$2,200k	Central concept
2000			
NSF MRSEC:	Salamo	$2,245k	Education component
Dept of Ed FIPSE:	Salamo, Vickers, Turner	$ 280k	Central concept
NSF PFI:	Loewer, Salamo, Vickers	$ 360k	Management component
2001			
NSF REU (3 year):	Brown, Salamo	$ 353k	Central concept
NSF IGERT RET:	Schaper, Salamo	$ 10k	Central concept
NSF MRSEC RET:	Salamo	$ 20k	Education component
DoEd FIPSE Supplement:	Salamo, Vickers, Turner	$ 25k	Central concept

2002			
NSF GK-12:	Salamo, Vickers, Hobson	$2,700k	Central concept
NSF REU RET:	Brown, Salamo, Vickers	$ 20k	Central concept
2003			
NSF REU (5 year):	Brown, Salamo, Vickers	$ 625k	Central concept
NSF Eng U/G Reform:	Vickers, Foster, Carter	$ 100k	Central concept
2004			
NSF PFI:	Saxena, Salamo, Foster	$ 600k	Entrepreneur education
2007			
NSF S-STEM:	Vickers, Oliver, Schaper	$ 600k	Central concept
2010			
NSF REU (3 year):	Vickers, Ulrich	$ 372k	Central concept

b. The NSF S-STEM grant continues to be a valuable asset in attracting good students to campus, especially as a source of startup funding for a student making a late decision to attend graduate. During the 2009-10 academic year nine graduate students and three undergraduate microEP minor students were supported.
c. The Electrical Engineering Department leadership solicited microEP input in course programming for the next academic year to understand together the impact of course scheduling issues on microEP students. This proactive approach by Juan Balda and Scott Smith was both effective and very much appreciated.

5. Problems to be addressed:

a. No academic year teaching budget has been approved to support microEP-generated courses.
b. Except for the notable exception of the EE department, decisions on scheduling of courses of interest to microEP students are being made with no consultation with microEP management to discuss implications of those decisions.
c. Departmental procedures on faculty assessment do not provide any opportunity for microEP input on performance issues dealing with such things as graduate student mentoring, teaching of microEP students, or service to the microEP graduate program.
d. The microEP Program Director's current year round responsibilities make it appropriate that the position be moved to a 12 month appointment instead of its current 9 month appointment. With the addition of the administrative management responsibilities of the NANO building to the microEP Director's position during this academic year, it has now become imperative that this issue be addressed.
e. The percentage population of women in the microEP program has dropped significantly over the last several cohorts. An effort will be made this year to understand this trend and to remove any program perceptions that would impede consideration of microEP as a viable graduate program supportive of women students.

6. Faculty self-associated with microEP Graduate Program

Biol & Ag Eng	Jin-Woo Kim
	Yanbin Li

BioMed Eng	Mahendra Kavdia	Graduate Studies Committee Member
	Kaiming Ye	
Chemical Eng	Robert Beitle	
	Jamie Hestekin	
	Keith Roper	Assistant Director, microEP
	Shannon Servoss	
	Rick Ulrich	Graduate Studies Committee Member
Chemistry	Ingrid Fritsch	
	Xiaogang Peng	
	Julie Stenken	
	Zhengrong (Ryan) Tian	
Civil Eng	Paneer Selvam	Assistant Director, microEP
Comp Sci/Eng	Jia Di	
Electrical Eng	Simon Ang	
	Juan Balda	
	Bill Brown	
	Magda El-Shenawee	
	Alex Lostetter	
	Omar Manasreh	
	Alan Mantooth	
	Hameed Naseem	
	Errol Porter	
	Vasundara Varadan	
	Fisher Yu	
Mechanical Eng	Matt Gordon	
	Adam Huang	
	Ajay Malshe	
	Doug Spearot	
	Steve Tung	
	Uche Wejinya	
	Min Zou	
MicroEP	Mourad Benamara	
	Russell DePriest (Adjunct)	Assistant Director, microEP
	Ron Foster (Adjunct)	
Physics	Laurent Bellaiche	
	Henry Fu	

Eitan Gross	
Jiali Li	
Lin Oliver	Graduate Studies Committee Member
Greg Salamo	
Surendra Singh	
Jak Tchakhalian	
Ken Vickers	Director, microEP
Min Xiao	

7. Faculty on microEP Graduate Program Assessment Team

Education Assessment	Sean Mulvenon
	Ronna Turner
Sociology	Douglas Adams

8. Adjunct Faculty of the microEP Graduate Program

Dr. Edward Beam III	TriQuint Semiconductor
Dr. Mourad Benamara	Adjunct Assistant Professor Research
Dr. Russell DePriest	Principal Member Technical Staff, Sandia National Labs
Vladimir Dotsenko	MCM Packaging, Hypres, Inc.
Professor Ron Foster	Adjunct Assistant Professor
Dr. Steven Kaplan	Hypres, Inc.
Dr. Jerzy Krasinski	Oklahoma State University

9. Thesis and Dissertation Titles Aug 2009-May 2010

August 2009 Graduates

- MEPHMS: "Proton Irradiation Effects on Semicondutor CdSe/ZnS Core/Shell Nanocrystals"; Stephen Charter *(Laser Test Engineer at Photonics Industries, Inc.)*; Major Professor – Omar Manasreh, EE.
- MEPHMS: "Design and Construction fo a Yag Laser"; Edwin Davis *(Quality Engineer at ITT Industries)*; Major Professor – Surendra Singh, Physics
- MEPHMS: "Factors Affecting Redox Magnetohydrodynamics For Flow In Small Volumes"; Matthew Gerner *(currently MS student in Counseling at John Brown University)*; Major Professor – Ingrid Fritsch, Chemistry
- MEPHMS: "Morphology Of InGaAs Multilayer Nanostructure On GaAs High-Index Surfaces"; Yanze Xie *(currently at home with young children)*; Major Professor – Greg Salamo, Physics

December 2009 Graduates

- MEPHPH: "Cubic and Hexagonal GaN/AIN Superlattice Structures for Near-Infrared Detector Applications"; Susan Jacob *(Process Engineer at MEMC Southwest)*; Major Professor – Len Schaper, EE

May 2010 Graduates

- MEPHPH: "Design, Fabrication and Testing of Broadband MEMS Antennas"; Douglas Arthur Hutchings *(President, Silicon Solar Solutions – a startup company)*; Major Professor – Magda El-Shenawee, EE

10. **Student Publications 2009-2010 (Students' Names Underlined)**

- Mazur, Yu.I; Dorogan, V.G.; Marega Jr., E.; Cesar, D.F.; Lopez-Richard, V.; Marques, G.E.; Zhuchenko, Z.Ya.; Tarasov, G.G.; Salamo, G.J. Cooperative effects in the photoluminescence of (In,Ga)As/GaAs quantum dot chains structures. Nanoscale Research Letters, Vol. 5, p.991 (2010).

- Wu, J.; Shao, D.; Dorogan, V.G.; Li, Alvason Z.; Li, S.; DeCuir Jr., E.A.; Manasreh, M.O.; Wang, Z.M.; Mazur, Yu.I.; Salamo, G.J. Intersublevel infrared photodetector with strain-free GaAs quantum dot pairs grown by high-temperature droplet epitaxy. Nano Letters, Vol. 10, p.1512 (2010).

- Lee, J.; Wang, Zh.M.; Dorogan, V.G.; Mazur, Yu.I.; Salamo, G.J. Evolution of various nanostructures and preservation of self-assembled InAs quantum dots during GaAs capping. IEEE Transactions on Nanotechnology, Vol. 9, p.149 (2010).

- Teodoro, M.D.; Campo Jr., V.L.; Lopez-Richard, V.; Marega Jr., E.; Marques, G.E.; Galvão Gobato, Y.; Iikawa, F.; Brasil, M.J.S.P.; Abu Waar, Z.Y.; Dorogan, V.G.; Mazur, Yu.I.; Benamara, M.; Salamo, G.J. Aharonov-Bohm interference in neutral excitons: effects of built-in electric fields. Physical Review Letters, Vol. 104, p.086401 (2010).

- D. A. Hutchings, M. El-Shenawee and S. Tung, "Design and Fabrication of a MEMS Steerable Broadband Antenna Capable of Dual Polarization," Proc. of the 2010 USNC-URSI National Radio Science Meeting, Boulder, Colorado, Jan. 6-9, 2010.

- D. A. Woten, R. M. Hajihashemi, A. Hassan and M. El-Shenawee, "Experimental Microwave Validation of Level-Set Reconstruction Algorithm," IEEE Trans Antennas and Propagation, Vol. 58, No. 1, pp. 230-233, Jan 2010.

- Lee, J.H.; Wang, Zh.M.; Dorogan, V.G.; Mazur, Yu.I.; Ware, M.E.; Salamo, G.J. Tuning the emission profiles of various self-assembled InGaAs nanostructures by rapid thermal annealing. Journal of Applied Physics, Vol. 106, p.073106 (2009).

- Alvason Zhenhua Li, Zhiming M. Wang, Jiang Wu, and Gregory J. Salamo, Holed Nanostructures Formed by Aluminum Droplets on a GaAs Substrate. **Nano Research**. 2010, (DOI 10.1007/s12274-010-0009-5).

- Zhenhua Li, Jiang Wu, Zhiming M. Wang, Dongsheng Fan, Aqiang Guo, Shibing Li, Shui-Qing Yu, Omar Manasreh, and Gregory J. Salamo, InGaAs Quantum Well Grown on High-Index Surfaces for Superluminescent Diode Applications, **Nanoscale Res Lett** (2010) 5:1079–1084 (DOI 10.1007/s11671- 010-9605-2).

- D. A. Hutchings, M. El-Shenaweee and S. Tung, "Fabrication and Testing of Dual Polarized Broadband MEMS Antennas," IEEE Trans. Microwave Theory and Technique, in review.

11. Conferences Students Presented June 1, 2009–May 31, 2010

- Mohammad K. Chowdhury, Li Sun, Shawn Cunningham, and Ajay P. Malshe, "Mechanically Punched Micro Via Fabrication Process in LCP Substrate for RF-MEMS and Related Electronic Packaging Applications," IMAPS 2009 Conference Proceeding, pg. 174-180, November 1 - 5, 2009

- Ledden, Brad, A. Lopez Cortajarena, L. Regan, D. Talaga, and J. Li.,"SOLID-STATE NANOPORE TRANSLOCATION OF IDEALIZED HELICAL REPEAT PROTEINS" Biophysical Society 54th Annual Meeting, 2010, San Francisco, CA.

- Sudip Koirala, Matt Gordon, *"The effects of SF_6 dilution in an Argon plasma",* APS April meeting, February 13-17, 2010, Washington, DC

- Mohammad K. Chowdhury, Li Sun, Shawn Cunningham, and Ajay P. Malshe, "Investigation of Chemical De-burring and Subsequent Plasma Cleaning of Mechanically Punched Micro Via Array Fabricated in LCP Substrate," Electronic Component and Manufacturing Technology Conference (ECTC), 2010

- Mohammad K. Chowdhury, and Ajay P. Malshe, "Micro Via Fabrication in LCP Substrate using Mechanical Punching Technique with Subsequent Plasma Cleaning of LCP BURR for RF-MEMS and Other Related Flexible Electronics Application," , 2010 International Symposium on Flexible Automation, Tokyo, Japan, July 12-14, 2010

12. Other Student Awards and Scholarships, June 1, 2009 – May 31, 2010

- **Drew Dejarnette (Cohort 13, non-traditional student, BA Mathematics/Physics, MS Math)** was awarded a four year UA Doctoral Academy Fellowship to begin in the Fall 2010 semester. He is working with Dr. Keith Roper in Chemical Engineering
- **Douglas Hutchings (Cohort 8, BA Physics, MS/PhD microP) and Seth Shumate (Cohort 9, MS microEP and currently PhD microEP student)** This team developed a plan to address the cost and efficiency challenges of manufacturing solar energy by replacing the expensive top layer of solar cells with a thinner, large-grain polysilicon technology that allows the panels to be produced at lower manufacturing temperatures (Hameed Naseem, EE Professor, is the inventor of the technology) Their company, Silicon Solar Solutions LLC, was second runner up in the Moot Corp competition after taking first place at the DOE Sponsored Oak Ridge National Labs Global Venture Challenge and the Stewart Clark Venture Challenge. Their company has won over $40k in prize money and currently has $400k of angel investor and ASTA funds.
- **Bryan Western (Cohort 8, BS EE/Physics and currently MS microEP student)** Bryant works for Arkansas Power Electronics International under Alex Lostetter (Cohort

2, PhD microEP). His business class team created a business plan around a high-temp wireless SiC electronics technology in development at APEI. They won 1st place at the Carnegie Mellon business plan competition ($20,000 cash award + $20,000 award in legal assistance); the "NASA Prize" at the Rice business plan competition for the best "game changing" technology ($20,000 cash); and 1st place in the Arkansas Governor's Cup Award in Little Rock ($20,000 cash).

Arkansas Center for Space and Planetary Sciences

1. STATUS AND PROGRESS – 2009-2010

1.1 Introduction

The Arkansas Center for Space and Planetary Sciences is a multi-disciplinary research and educational organization, created in 2000. It has 17 faculty from seven departments, and currently 21 PhD students. The Center's research laboratories, staff offices, student offices, the Director's office, and some auxiliary faculty offices are located in the old Field House, FELD. The building contains a planetarium used for classes in ASTR, SPAC, and MEEG, and for outreach activities. FELD also has a meeting room and partitioned areas on the gym floor used for a library, auditorium, and the program office for the NASA-funded Arkansas Galaxy Evolution Survey.

The Center serves two distinct but interrelated roles at the University. It is a research organization which maintains facilities, equipment, instrumentation, and computers for research in a wide range of space and planetary sciences. Outreach activities are a significant part of these efforts. Additionally, it is the home for the interdisciplinary graduate degree programs in Space and Planetary Sciences (SPAC), created in 2005, and maintains all of the experimental, computational, and administrative functions necessary for those programs.

1.2 Center Direction

Personnel changes continued to influence the direction of the Center during 2009-2010. Sharon Gaber became the new Provost of the University in July 2009. She is a very strong proponent of interdisciplinary graduate degree programs and has reinforced the Chancellor's enthusiasm for such programs. Collis Geren, long-time Dean of the Graduate School and Vice-Provost for Research, and a great supporter of the Center and our degree programs, retired effective June 30, 2010, with his duties and responsibilities being split between two new positions; Dean of the Graduate School and International Programs, and Vice Provost for Research and Economic Development, both of whom report to the Provost. Todd Shields of the Political Science Department is graduate Dean on an interim basis, and the new VPRED is James Rankin, who comes to us from Ohio University. Under this new administrative arrangement, the Center Director will report to the VPRED, while the Director of the degree programs will report to the Dean of the Graduate School. Although it was requested, the University has not approved the creation of a new, permanent, full-time position for Center Director. Larry Roe, who served on a part-time, year-to-year basis for two years as Center Director (and nominal Director of the degree program) has elected not to continue in that position. A review of internal candidates is in progress. Rick Ulrich, Center Deputy Director and previously Graduate Program Coordinator

under the Center Director, will continue as Deputy Director of the Center and will officially become Director of the Interdisciplinary Degree Programs in Space and Planetary Sciences.

There are also imminent changes to the physical plant of the Center. The University has recognized that we need space dedicated to our use and specifically designed for our needs. We expect to move to new, expanded facilities within the next two years. We are currently studying the suitability of converting a 3-story (currently unused) dormitory (with a large high-bay space) to our use. The building has about 25,000 square feet of floor space, providing room for expansion beyond the 18,000 square feet that we currently occupy in the old Field House. The Board of Trustees has approved preliminary work, and $600,000 was allocated for the architectural study and early phases of construction. Allison Architects was contracted to do the work and has completed the programming phase of the architectural study. If the next study phase shows that the existing building can be modified to fit our needs, construction is tentatively scheduled to begin in October 2010. The expected cost for the renovation is approximately $5.2 million.

The Center is now at the end of the fifth year of its current five-year plan. The faculty have decided to delay any revisions until a new Director is selected. It is felt that the new Director will likely have new priorities and will bring expertise in new areas, offering the opportunity to redirect our focus.

1.3 Research

The Center's research programs continued successfully. Table 1 shows the 12 grants in effect during the 2009-2010 academic year. These grants have eight different PI's and a total value of approximately $3.7 million. Table 2 lists proposals submitted this year. In addition to proposal activity, Center faculty and students produced over 70 publications and conference presentations, which are listed in Section 2.2 of this report.

Table 1. Grants in effect during the academic year 2009-2010.

PI	Co-I	Title	Agency	Amount
Dan Kennefick	J. Kennefick, C. Lacy, M. Seigar,	Arkansas Galaxy Evolution Survey (AGES)	NASA-EPSCoR	$503,838
Julia Kennefick	D. Sears	REU Site: Interdisciplinary Research Experience in the Astronomical, Space, and Planetary Sciences	NSF	$273,750
Vincent Chevrier	L. Roe, R. Ulrich	Experimental Study of the Stability of Prebiotic Organic Volatiles on the Surface of Titan	NASA	$516,049

Vincent Chevrier		Study of the Stability and Dynamics of Water at the Phoenix Landing Site	NASA	$249,456
Derek Sears		Radiation and Thermal History of Stardust Particles	NASA	$421,090
Rick Ulrich	L. Roe, V. Chevrier, M. Leftwich	Optical Probe for Regolith Analysis (OPRA)	NASA	$402,955
Rick Ulrich		Studies of Iaepetus Thermal Properties from the Cassini Spacecraft	ASGC	$8525
Rick Ulrich		Visual Infrared Mapping Spectrometer Studies of Saturn Moons	ASGC	$8891
Fangzhen Teng		Magnesium Isotopic Investigations of Oceanic Basalts and Olivines	NSF	$175,022
Fangzhen Teng		Magnesium and Iron Isotopic Investigation of Lunar Samples	ASGC	$11,400
Adam Huang	L. Roe	BalloonSat-based Micro Thruster Flight Tests	ASGC	$58,000
Larry Roe		Arkansas Center for Space and Planetary Sciences - Infrastructure	NASA	$1,000,000

Table 2. Proposals submitted during the academic year 2009-2010 (partial list).

PI	Co-I	Title	Agency	Amount	Status
Vincent Chevrier		Experimental study of the formation and stability of phyllosilicates on Mars	NASA	$403,278	Declined
Vincent Chevrier	M. Ivey	Sulfate Reduction: A Model for Subsurface Martian Life	NASA	$645,847	Declined
Vincent Chevrier	L. Roe, R. Ulrich	Experimental Study of the Stability of Prebiotic Organic Volatiles on the Surface of Titan	NASA	$516,049	Funded
Vincent Chevrier	L. Roe, R. Ulrich	Transient Numerical Model of Diurnal Water Vapor Dynamics in Subsurface	NASA	$415,493	Declined

		Environments on Mars and other Planetary Bodies			
Vincent Chevrier	R. Ulrich	Simulating Liquid Flows on the Martian Surface	NASA	$459,000	Declined
Vincent Chevrier		Study of the Stability and Dynamics of Water at the Phoenix Landing Site	NASA	$249,456	Funded
Vincent Chevrier		Experimental Study of the Stability of Perchlorates and other Oxidized Chlorine Compounds on Mars	NASA	$25,947	Declined
Vincent Chevrier		Effect of Heat and Meteorite Impacts on Martian Phyllosilicates	NASA	$25,937	Declined
Rick Ulrich	L. Roe, V. Chevrier	Optical Probe for Regolith Analysis (OPRA) – Phase II	NASA	$399,000	Declined
Rick Ulrich		Studies of Iapetus Thermal Properties from the Cassini Spacecraft	ASGC	$8528	Funded
T. Kral	V. Chevrier, R. Ulrich	Growth and Survival of Methanogens under Martian Conditions	NASA	$500,592	Declined
Adam Huang	L. Roe	BalloonSat-based Micro Thruster Flight Tests – Phase II	ASGC	$29,000	Funded
Fangzhen Teng		Magnesium and iron isotopic investigation of lunar samples	ASGC	$11,400	Funded
Jennifer Hanley	V. Chevrier	Stability of Perchlorates and other Oxidized Chlorine Aqueous Solutions on Mars	UNCF	$64,000	Declined
Patricia Gavin	V. Chevrier	Effect of Heat and Meteorite Impacts on Phyllosilicates	UNCF	$64,000	Declined
Edgard Rivera-Valentin	V. Chevrier	Thermal, Mass Transfer, and Geochemical Modeling of Martian Paleolakes	UNCF	$64,000	Declined
Cassandra Marnocha	J. Dixon	Microbe Mineral Interactions in Rock Coatings from Karkevagge, Northern Scandinavia	UNCF	$64,000	Declined

Kelly Howe	J. Dixon	An Experimental Study of Viscous Fluids and Associated Morphology of Flow Features with Application to Mars	UNCF	$64,000	Declined

1.4 Education

1.4.1 Undergraduate education – the REU program

The Research Experience for Undergraduates (REU) program is an interdisciplinary summer program that the Center began conducting in 2002. The first three years were funded by an NSF award, while years 2005-2008 were supported by various Center research grants. For 2009 and 2010, we are again funded by NSF. This ten week program brings typically 8-12 students from a variety of science and engineering backgrounds to the Center to conduct research on topics in space and planetary sciences. The students are assigned mentors in their respective research areas, and get the opportunity to experience life as a graduate student. REU research interests range from geomorphology to instruments for spacecraft. The students also prepare midterm oral presentations, end-of-term posters, and often attend a follow-up national conference at a later date. In recent years, about 70% of the participants in this program have presented their work at the annual Lunar and Planetary Science conference. Information on REU participants may be found in the individual center report.

1.4.2 Graduate degree programs in Space and Planetary Sciences

The SPAC degree programs produced 5 graduates in 2009-2010, bringing the total to 9. Five additional students are expected to complete their degree requirements by the end of the 2010 summer session. Table 4 lists all SPAC students to date.

Of the 21 current students, 15 have passed the PhD candidacy exam. Eight of the 21 have major professors associated with the College of Engineering, and 12 have advisors in the Fulbright College of Arts and Sciences. Faculty currently advising students are Sears (2), Ulrich (4), Chevrier (4), Dixon (4), Teng (2), Lacy (1), Dan Kennefick (1), and Julia Kennefick (2). Sixteen of the students are US citizens, and 10 are female. The high quality of the students participating in this program is worth stressing. Among the 25 students that will be in the program this Fall (counting new Fall 2010 enrollees), 23 are in the PhD program and 6 have Doctoral Academy Fellowships.

New collaborative internship opportunities were established in 2010. After an initial familiarization visit by the Director and Deputy Director, several Center faculty were invited to JPL (at JPL expense) for an all-day interaction with a wide range of JPL researchers to establish new collaborations. In the long term, this is expected to open new doors for research collaborations, but it also led directly to internship positions for two SPAC students during summer 2010. The number of students doing internships at JPL is expected to continue growing as a result of these efforts.

The goal of the SPAC degree program is to attain and maintain a population of 50 students. We have grown from zero in 2005 to 25 for Fall 2010, so we have been achieving the growth we need to reach that goal. Continued growth, however, will require more stable sources of funding and an increased number of mentoring faculty.

1.4.3 Public Outreach

Outreach is a significant aspect of the Center's educational operations. The Center monthly newsletter, Space Notes, is distributed on campus and to other interested parties. *Meteorite* magazine is written for a wide audience and published quarterly. We provide a meteorite identification service which results in about 20-30 sample submissions per year from members of the public. The Center offers several public lectures each year, including the Barringer lecture (funded by the Barringer Crater Company) and the Arkansas Public Lectures in Space and Planetary Science, typically given by Center faculty.

This year's Barringer lecturer was Dr. Mike Zolensky, NASA Cosmic Dust Curator and a researcher at NASA-Johnson Space Center, who spoke on *From Telescope to Microscope: The story of how we captured pieces of a comet and the message they carry.* The Public Lecturers were Dr. Harold W. Yorke, manager of the Science Division at JPL, who presented a lecture entitled *A Brief History of Massive Stars: Their Birth, Life, and Death*; Dr. Bonnie Buratti of JPL with *Seasons in the Frigid Regions of the Solar System*; and David Blackburn, SPAC PhD student, who spoke on *How the Transport of Carbon Dioxide Shapes Icy Worlds*.

We also provide planetarium demonstrations on request. From July 2009 to June 2010, we gave educational programs for over 500 local school students, including students from O Street Academy in Bentonville, Helen Tyson Middle School in Springdale, Camp War Eagle Academy, several homeschooling organizations, West Fork Elementary, and Prairie Grove Middle School. Our students also left campus to give presentations at Busy Bees Christian Preschool in Prairie Grove and Boone County Library.

Three members of the Center traveled on separate occasions to the Boone County Library in Harrison, Arkansas to give public presentations in support of the traveling exhibit "Visions of the Universe," awarded to the library by the American Library Association. SPAC PhD student David Blackburn gave a talk titled *Recent Discoveries on the Icy Satellites of Saturn*. Joel Berrier, a post-doctoral fellow at the Space Center, gave a series of talks entitled *Tour of the Solar System*. Center Director Larry Roe's presentation was *Careers in the Space Program*, for a target audience of high school and community college students.

The Center previously provided two annual summer workshop opportunities for K-12 teachers in Arkansas, the week-long STORI Workshop in astronomy for teachers in grades 4-8, and the 3-day WebScopes in the Classroom Workshop for teachers in grades 7-12. The STORI Workshop was most recently offered in 2007, and the WebScopes program in 2008. Due to very low attendance, these programs have been reevaluated and are no longer being offered.

1.5. Personnel

The Center has three full-time personnel, all of whom are also completely involved in the SPAC degree program. All three positions are provisional, and have previously been supported by outside sources, including funds from the Keck Foundation, NSF-EPSCoR, NASA competed proposals, and appropriation funding routed through NASA.

Research Assistant Professor – Vincent Chevrier
Vincent came to the Center as a post-doctoral researcher in 2005, and became a Research Assistant Professor with Graduate Faculty I status in 2008. He is the only faculty member whose efforts are full-time with the Center; he is the major professor for five SPAC students, and is an important advisor to four others. He has over 70 publications and presentations and is the major initiator of Center research proposals.

Center Manager – Jessica Park
In 2009-2010, Jessica filled the only administrative position for the Center and the SPAC degree programs, under the university title of Project Programs Specialist. She worked in this position since May 2005, but left the Center in June 2010. The position remains unfilled as of June 30, 2010. In the past, the salary for this position has been partially covered by revenue from Meteorite Magazine, a popular periodical published quarterly by the Center. For the magazine, the duties include handling all subscription issues (creating subscriptions, handling and depositing funds, answering inquiries, etc.), selling and shipping back issues, advertising sales, other interactions with advertisers, interactions with the technical editors in Arizona, magazine layout and proof preparation, all interactions with the printer, and mailing. Essentially, this position handles all aspects of the magazine production and distribution other than selection of articles and technical editing.

Other responsibilities for this position include: preparation and distribution of all Center publicity, such as posters, flyers, mailings, and radio ads for public lectures (typically 8-10 per year); composing, printing, and distributing the monthly Center newsletter; scheduling and coordinating all Center outreach activities (visits to schools and libraries, planetarium shows, summer workshops, etc.); maintaining financial records for the Center and handling other BASIS tasks; coordinating the summer REU program, including all publicity and correspondence with applicants; coordinating the Center's meteorite identification program; maintaining SPAC student records and payroll; maintaining the Center webpage; and other tasks as requested by Center faculty and coordinated through the Director.

Laboratory Manager – Walter Graupner
Walter has worked for the Center since June 2005 (under the university title of Scientific Research Technologist) and has a wide range of responsibilities in the research laboratories and throughout the building. He constructs, installs, and maintains most of the experimental research equipment used by the majority of SPAC students, including plumbing and electrical service, cryogenic systems, vacuum systems, instrumentation maintenance, servicing of vacuum pumps, thermal control systems, etc. He manages the day-to-day lab operations and coordinates lab space among the various faculty and students, specifies and purchases lab hardware, etc.

Walter is the radiation safety coordinator for the building, responsible for maintaining radiation safety procedures, signage, and personal dosimeters for personnel using the two rooms in MUSE with radiation sources. He is responsible for general lab safety, maintains the Center's chemical inventory, maintains the University inventory for equipment allocated to the Center, and is the alternate Building Executive.

He is also the factory-trained technician who services, maintains, and, when necessary, repairs the Center's ICPMS instrument. This is an approximately $700,000 instrument obtained in 2007 which is the cornerstone of the research of faculty member Fangzhen Teng.

2. CENTER ACHIEVEMENTS – 2009-2010

2.1 Awards, Including External Funding

Five of the research proposals listed in Table 2 were funded this year:

- "Experimental Study of the Stability of Prebiotic Organic Volatiles on the Surface of Titan," Vincent Chevrier (PI), Larry Roe and Rick Ulrich, funded by the NASA Outer Planets Program, $516,049.
- "Study of the Stability and Dynamics of Water at the Phoenix Landing Site," Vincent Chevrier (PI), funded by NASA Phoenix Data Analysis Program, $249,456.
- "Studies of Iapetus Thermal Properties from the Cassini Spacecraft," Rick Ulrich (PI), funded by the Arkansas Space Grant Consortium as a summer internship for PhD student David Blackburn at JPL, $8528.
- "Magnesium and iron isotopic investigation of lunar samples," Fangzhen Teng (PI), funded by the Arkansas Space Grant Consortium, $11,400.
- "BalloonSat-based Micro Thruster Flight Tests – Phase II," Adam Huang (PI), Larry Roe, funded by the Arkansas Space Grant Consortium, $29,000.

The Center received a featured article in the 10th Anniversary Edition of the University's *Research Frontiers* magazine, featuring the work of Center faculty members Vincent Chevrier, Fangzhen Teng, Julia Kennefick, and Dan Kennefick.

2.2 Publications and Conference Presentations

During the 2009-2010 academic year, Center faculty and students produced over 60 conference presentations (oral and posters) and 16 journal publications, on work directly related to Center research and the SPAC degree programs.

Addison, B.C., V.F. Chevrier, J.C. Dixon, and K.L. Howe, Experimental Simulations of Martian Gullies Using MgSO4 Brine Solution. 41st Lunar and Planetary Science Conference, # 1399, The Woodlands, TX, March 2010.

Altheide, T. and V. F. Chevrier, Mineralogical Characterization of Acid Weathered Phyllosilicates. 41st Lunar and Planetary Science Conference, # 2042, The Woodlands, TX, March 2010.

Altheide, T. S.; Chevrier, V. F.; Rivera-Valentin, E. G.; Wray, J. J., Modeling the Stability of an Ancient Paleolake in Columbus Crater, Terra Sirenum, Mars, Workshop on Modeling Martian Hydrous Environments, June 1-3, 2009, Houston, Texas.

Altheide, T., V. F. Chevrier, E. G. Rivera-Valentin, J. J. Wray, Geochemical Modeling of the Evaporation of an Ancient Paleolake in Columbus Crater, Terra Sirenum, Mars. 41st Lunar and Planetary Science Conference, # 2479, The Woodlands, TX, March 2010.

Altheide, T.S., V. Chevrier, C. Nicholson, J. Denson, 2009. Experimental investigation of the stability and evaporation rate of sulfate and chloride brines on Mars. *Earth Planet Sci. Lett.*, in press.

Andros, D. , "Reconstruction of Lunar Orbital Periodicities and their Impact on Tidal Sediments and Early Life," American Astronomical Society, AAS Meeting #214, Pasadena, June 2009, #305.01; Bulletin of the American Astronomical Society, Vol. 41, p.721

Blackburn, D.G., K.L. Bryson, V.F. Chevrier, L.A. Roe, K.F. White (2010) Sublimation kinetics of CO2 ice on Mars, *Planetary and Space Science*, 58, 780-791, doi: 10.1016/j.pss.2009.12.004.

Blackburn, D.G., B.J. Buratti, R. Ulrich, J. Mosher (2010). Solar phase curves and phase integrals for the leading and trailing hemispheres of Iapetus from the Cassini Visual and Infrared Mapping Spectrometer, *Icarus*, in press.

Blackburn, D.G., Buratti, B.J., Ulrich, R., 2009. "Bolometric Bond albedo map of Iapetus," 41st Division of Planetary Sciences Conference, Fajardo, Puerto Rico.

Blackburn, D., B. J. Buratti, R. Ulrich, J. Mosher, A Bolometric Bond Albedo Map of Iapetus from the Merger of Cassini VIMS and Voyager ISS Data. 41st Lunar and Planetary Science Conference, # 1242, The Woodlands, TX, March 2010.

Chastain, B.K., T.A. Kral, V.F.Chevrier, and T.S. Altheide. Growth and biomediated mineral alterations by methanogens under geochemical conditions similar to the Martian subsurface. 2010 Astrobiology Science Conference, League City, Texas, April 2010.

Chevrier, V., E. Dehouck, A. Gaudin, N. Mangold, P.E. Mathe, P. Rochette, Experimental Verification of the "Burns" Hypothesis for the Formation of Meridiani Planum Sediments Through Weathering of Sulfide-Rich Deposits. 41st Lunar and Planetary Science Conference, # 2440, The Woodlands, TX, March 2010.

Chevrier, V., J. Hanley, E. Rivera-Valentin, Regolith Control of Atmospheric Water Vapor on Mars from Analysis of Phoenix TECP Data. 41st Lunar and Planetary Science Conference, # 2559, The Woodlands, TX, March 2010.

Chevrier, V. F.; Hanley, J., Thermodynamic Properties of Oxidized Forms of Chloride and Applications to the Phoenix Surface Chemistry, The New Martian Chemistry Workshop, July 27-28, 2009, Medford, Massachusetts.

Chevrier, V. F.; Ulrich, R.; Altheide, T. S., Viscosity of Liquid Ferric Sulfate Solutions and Application to the Formation of Gullies on Mars, Workshop on Modeling Martian Hydrous Environments, June 1-3, 2009, Houston, Texas.

Chevrier, V. F., Early Martian Surface Conditions from Thermodynamics of Phyllosilicates, Workshop on Modeling Martian Hydrous Environments, June 1-3, 2009, Houston, Texas.

Chevrier, V.F., Phyllosilicates, carbonates, methane and the habitability of NILI Fossae on early Mars. 2010 Astrobiology Science Conference, League City, Texas, April 2010.

Chevrier, V., Ulrich, R., and T.S. Altheide (2009). Viscosity of Liquid Ferric Sulfate Solutions and Application to the Formation of Gullies on Mars, *J. Geophys. Res.*, *114*(E06001), doi: 10.1029/2009/JE003376.

Coleman, K. A., J. Dixon, K. L. Howe, V. F. Chevrier, Slushflows as Analogs for Martian Gully Formation. 41st Lunar and Planetary Science Conference, # 2741, The Woodlands, TX, March 2010.

Coleman, K. A.; Dixon, J.; Howe, K. L.; Chevrier, V. F., Investigating the Processes Creating Gullies on Mars, First International Conference on Mars Sedimentology and Stratigraphy, April 19-21, 2010, El Paso, Texas.

Craig, J.P. and D. Sears, Natural and Induced Thermoluminescence Data for Twenty-Five 10-15 um Particles from the L3.0 Ordinary Chondrite Semarkona: Implications for the Nature and History of Primitive Solar System Material. 41st Lunar and Planetary Science Conference, # 1401, The Woodlands, TX, March 2010.

Craig, J. P.; Sears, D. W. G., The fine-grained matrix of the Semarkona LL3.0 ordinary chondrite: An induced thermoluminescence study, *Meteoritics & Planetary Science*, vol. 44, Issue 5, p.643-652, 2009.

Dauphas, N., Pourmand, A. and Teng, F.-Z. (2009) Routine isotopic analysis of iron by HR-MC-ICPMS: How precise and how accurate?, *Chemical Geology*, 267, 175-184.

Dauphas, N., F. Teng, N. Arndt (2010). Magnesium and iron isotopes in 2.7 Ga Alexo komatiites: Mantle signatures, no evidence for Soret diffusion, and idenfication of diffusive transport in zoned olivine. *Geochim. Cosmochim. Acta* (2010), doi:10.1016/j.gca.2010.02.031.

Davis, B., Berlanga M., Shields, D., Kennefick, J.; Kennefick, D.; Berrier, J.; Seigar, M. S.; Lacy, C. H. S.; "AGES Investigating the Clustering and Color of Galaxies in the COMBO-17 Chandra Deep Field South Survey and Possible Effects on Spiral Arm Pitch Angle,"

American Astronomical Society, AAS Meeting #215, #435.17; Bulletin of the American Astronomical Society, Vol. 42, p.382.

Dehouck, E.; Chevrier, V.; Gaudin, A.; Mangold, N.; Mathé, P.-E.; Rochette, P.Sulfates Formation by Weathering of Silicates and Sulfides on Mars: Experimental Approach First International Conference on Mars Sedimentology and Stratigraphy, April 19-21, 2010, El Paso, Texas.

Dixon, J.C., K. Howe, and K. A. Coleman, Periglacial Hillslope Analogs for Martian Gully Formation. 41st Lunar and Planetary Science Conference, # 2392, The Woodlands, TX, March 2010.

El Shafie, A., V.F. Chevrier, R. Ulrich, and L .Roe, Penetration Testing in Martian Analog Material. 41st Lunar and Planetary Science Conference, # 1293, The Woodlands, TX, March 2010.

ElShafie, A., V. F. Chevrier, R. Ulrich, and L. A. Roe (2010), Penetration testing for the Optical Probe for Regolith Analysis (OPRA), *Advances in Space Research*, in press.

Fairen, A., Chevrier, V., Abramov, O., Marzo, G., Gavin, P., Davila, A., Tornabene, L., Bishop, J., Roush, T., Gross, C., Kneissl, T., Uceda, E., Dohm, J., Schulze-Makuch, D., Rodriguez, J.A.P., Amils, R., McKay, C. (2010), "Phyllosilicates in Impact Craters on Mars: Pre- or Post-Impact Genesis", *Proceedings of the National Academy of Sciences*, in press.

Fairén, A.G., V. Chevrier, O. Abramov, G. A. Marzo, P. Gavin, A. F. Davila, C. Gross, T. Kneissl, T. L. Roush, J. L. Bishop, L. L. Tornabene, J. M. Dohm, J. A. P. Rodríguez, D. Schulze-Makuch, and C. P. McKay, Toro Crater: first Evidence for Hesperian Phyllosilicates on Mars. 41st Lunar and Planetary Science Conference, # 2683, The Woodlands, TX, March 2010.

Fairén, A.G., G.A. Marzo, V.F. Chevrier, P. Gavin, A.F. Davila, C. Gross, T. Kneissl, T.L. Roush, J.L. Bishop, J.M. Dohm, L.L. Tornabene, and C.P. McKay. Toro Crater: The case for hesperian phyllosilicates on Mars. 2010 Astrobiology Science Conference, League City, Texas, April 2010.

Gavin, P., V. Chevrier, K. Ninagawa, A. Gucsik, S. Hasegawa. Experimental Investigation into the Effects of Meteoritic Impacts on the Spectral Properties of Phyllosilicates on Mars. 41st Lunar and Planetary Science Conference, # 1890, The Woodlands, TX, March 2010.

Gavin, P., V. Chevier, M.R.G. Sayyed, R. Islam, Spectral Analysis of Deccan Paleosols, India: Analog for Phyllosilicates on Mars. # 1904, 41st Lunar and Planetary Science Conference, The Woodlands, TX, March 2010.

Gavin, P. and V. Chevrier (2010), Thermal Alteration of Nontronite and Montmorillonite: Implications for the Martian Surface, *Icarus*, in press, doi: 10.1016/j.icarus.2010.02.027

Goodhart, T. and T.A. Kral.The effects of perchlorate on methane production of methanogens. 2010 Astrobiology Science Conference, League City, Texas, April 2010.

Hanley, J., V. F. Chevrier, B. L. Davis, T. S. Altheide, A. Francis, Reflectance Spectra of Low-Temperature Chloride and Perchlorate Hydrates and their Relevance to the Martian Surface. 41st Lunar and Planetary Science Conference, # 1953, The Woodlands, TX, March 2010.

Hanley, J., D. Berget, and V. F. Chevrier, Thermodynamic Properties of Aqueous Chlorine Oxyanion Solutions and Their Applications to Mars. 41st Lunar and Planetary Science Conference, # 1971, The Woodlands, TX, March 2010.

Hanley, J.; Chevrier, V. F.; Altheide, T. S., Aqueous Perchlorate Liquid Solutions at the Phoenix Landing Site, Workshop on Modeling Martian Hydrous Environments, June 1-3, 2009, Houston, Texas.

Hanley, J.; Chevrier, V. F.; Davis, B. L.; Altheide, T. S.; Francis, A., Reflectance Spectra of Low-Temperature Chloride and Perchlorate Hydrates and Their Relevance to the Martian Surface, The New Martian Chemistry Workshop, July 27-28, 2009, Medford, Massachusetts.

Hanley, J.; Chevrier, V. F., Hydrous Perchlorates and Their Relation to Humidity at the Phoenix Landing Site, The New Martian Chemistry Workshop, July 27-28, 2009, Medford, Massachusetts.

Howe, K.L., Dixon, J. C., and Chevrier, V. F, Effects of Viscosity on the Morphology of Martian Flow Features. 41st Lunar and Planetary Science Conference, # 1706, The Woodlands, TX, March 2010.

Howe, K. L.; Gavin, P.; Kral, T. A.; Goodhart, T.; Chevrier, V., Methanogen Growth in Perchlorate-supplemented Media and Implications for Life in Phoenix-Type Soils, The New Martian Chemistry Workshop, July 27-28, 2009, Medford, Massachusetts.

Howe, K. L.; Rivera-Valentin, E. G.; Chevrier, V. F.; Dixon, J. C., Experimental Simulation of the Effect of Viscous Fluids on Martian Gully Forms, Workshop on Modeling Martian Hydrous Environments, June 1-3, 2009, Houston, Texas.

Kegege, O., M. Barlow, and A. Mantooth, “Integrated Reconfigurable Driver for Cryogenic Space Applications”, European Planetary Science Congress, Vol. 4, September 2009.

Kegege, O., M. Barlow, A. Mantooth, R. Ulrich, “Assessment of Mission Optimization, Performance, and Tradeoffs of Using SiGe Based Electronics for a Cryogenic Environment Rover Mission”, IEEE Aerospace Conference, March 2010.

Kegege, O., K. Cornett, M. Barlow, A. Mantooth, “Integrated Sensor Interface and Actuation Control for Lunar Surface Exploration”, The 60th International Astronautical Congress, October 2009.

Ke, S., Teng, F.-Z. and Walker, R.J. “Magnesium isotope fractionation during differentiation of Harney Peak granite”, Fall AGU 2009.

Kral, T., Can Methanogens Grow in a Perchlorate Environment on Mars? 72nd Annual Meeting of the Meteoretical Society, Nancy, France, July 2009.

Kral, T.A., T.S. Altheide, A.E. Lueders, T.H. Goodhart, B.T. Virden, W. Birch, K.L. Howe and P. Gavin. Methanogens: A model for life on Mars. 2010 Astrobiology Science Conference, League City, Texas, April 2010.

Li, W., Teng., F.-Z., Ke, S., Rudnick, R.L., Gao, W., Wu, F.-Y. and Chappell, B.W. Magnesium isotopic composition of the upper continental crust, Fall AGU 2009.

Leeman, J.R., D.G. Blackburn, M.E. Elwood Madden, R. Ulrich, and V. Chevrier, CO2 Clathrate Dissociation Rates Below the Freezing Point of Water. 41st Lunar and Planetary Science Conference, # 1418, The Woodlands, TX, March 2010.

Luspay-Kuti, A., A. Kereszturi, V. F. Chevrier,Analysis of Frost Inside and Around Dokka Crater in the North Polar Region of Mars. 41st Lunar and Planetary Science Conference, # 2028, The Woodlands, TX, March 2010.

Marnocha, C., V. F. Chevrier, and D. M. Ivey, Sulfate-Reducing Bacteria as a Model for Life in the Martian Subsurface. 41st Lunar and Planetary Science Conference, # 1536, The Woodlands, TX, March 2010.

Marnocha, C.L., V.F. Chevrier, and D.M. Ivey, Sulfate-reducing bacteria as a model for life in the martian subsurface. 2010 Astrobiology Science Conference, League City, Texas, April 2010.

McHenry, L.J., V. F. Chevrier, and C. Schröder, The Formation and Destruction of Jarosite in a Saline-Alkaline Paleolake Deposit: Implications for Mars. 41st Lunar and Planetary Science Conference, # 1476, The Woodlands, TX, March 2010.

Murphy, C. and T.A. Kral. The effects of desiccation on methanogens under aerobic and anaerobic conditions. 2010 Astrobiology Science Conference, League City, Texas, April 2010.

Ostrowski, D.R., D. Sears, C.H.S. Lacy, and K. Gietzen, Heating Experiments on Phyllosilicates-Evaporite Mixtures: Implications for the Surface Composition of C Asteroids. 41st Lunar and Planetary Science Conference, # 1235, The Woodlands, TX, March 2010.

Ostrowski, D., Asteroidal Origins for Carbonaceous Chondrites. 72nd Annual Meeting of the Meteoretical Society, Nancy, France, July 2009.

Parashar, S. and T.A. Kral. Possibility of methanogens on Enceladus. 2010 Astrobiology Science Conference, League City, Texas, April 2010.

Rivera-Valentin, E., R. Ulrich, V. F. Chevrier, T. S. Altheide, J. J. Wray, Dynamic Modeling of Martian Paleolake Stability. 41st Lunar and Planetary Science Conference, # 1446, The Woodlands, TX, March 2010.

Rivera-Valentin, E. G.; Chevrier, V. F., Time Dependent Model for Water Vapor Diffusion/Adsorption and Heat Transfer at the Phoenix Landing Site, The New Martian Chemistry Workshop, July 27-28, 2009, Medford, Massachusetts.

Rivera-Valentin, E. G.; Chevrier, V. F.; Ulrich, R., Time Dependent Model for Heat Transfer and Water Vapor Diffusion/Adsorption at the Phoenix Landing Site, Workshop on Modeling Martian Hydrous Environments, June1-3, 2009, Houston, Texas

Sears, D., S Asteroids: Are Some of the Things Missing Melts UOC? 72nd Annual Meeting of the Meteoretical Society, Nancy, France, July 2009.

Sears, D., J.P. Craig, Thermoluminescence and the History of Cometary Particles. 41st Lunar and Planetary Science Conference, # 1404, The Woodlands, TX, March 2010.

Sears, Derek W. G.; Saxton, John M.; Lyon, Ian C., Mass-independent fractionation of oxygen isotopes in the mesostasis of a chondrule from the Semarkona LL3.0 ordinary chondrite, *Geochimica et Cosmochimica Acta*, v. 73, iss. 13, p. 3948-3962, 2009.

Sedaghatpour, F., "Magnesium isotopic composition of the Moon," Goldschmidt conference, Knoxville Tennessee, June 2010.

Sedaghatpour, F.; Sears, D. W. G., Characterization of Antarctic micrometeorites by thermoluminescence, *Meteoritics & Planetary Science*, vol. 44, Issue 5, p.653-664, 2009.

Teng, F.-Z., Li, W., Ke, S., Marty, B., Huang, S., Dauphas, N., Wu, F.-Y and Helz, R.T. “Magnesium isotopic composition of the mantle”, Fall AGU 2009.

Teng, F.-Z., Rudnick, R. L., McDonough, W.F. and Wu F.-Y. (2009). Lithium isotopic systematics of A-type granites and their mafic enclaves: Further constraints on the Li isotopic composition of the continental crust, *Chemical Geology*, *262*, 415-424.

Torres, G., Lacy, C.H.S., & Claret, A. (2009) Absolute Properties of the Highly Eccentric Eclipsing Binary Star LV Herculis, *Astron, J.*, 138, 1622-1633.

Tryon, R.K. and T.A. Kral. Heat tolerance of methanogens. 2010 Astrobiology Science Conference, League City, Texas, April 2010.

Ulrich, R. (2009), Modeling diffusion advection in the mass transfer of water vapor through martian regolith, *Icarus, 201*(1), 127-134.

Virden, B.T. and T.A. Kral, Methanogen use of insoluble carbonates and the implications for life on Mars. 2010 Astrobiology Science Conference, League City, Texas, April 2010.

Wasiak, F., H. Hames, V. Chevrier, D.G. Blackburn, Characterizing the Stability of Titan's Northern Lakes Using Image Analysis and Mass Transfer Modeling. 41st Lunar and Planetary Science Conference, # 1538, The Woodlands, TX, March 2010.

Yang, W., Teng, F.-Z. and Zhang, H.-F. (2009) Chondritic magnesium isotopic composition of the terrestrial mantle: A case study of peridotite xenoliths from the North China craton, *Earth and Planetary Science Letters*, 288, 475- 482.

Yang, W., Teng, F.-Z. and Zhang, H.-F. "Chondritic magnesium isotopic composition of the terrestrial mantle: A case study of peridotite xenoliths from the North China craton", Fall AGU 2009.

3. ACHIEVEMENTS OF STUDENTS AND ALUMNI – 2009-2010

3.1 Achievements of Current Students

Adam Hughes served as one of 50 students nationwide as a student ambassador for the NASA International Year of Astronomy program. Among his achievements in that capacity, he brought to the University a NASA traveling exhibit of Hubble Space Telescope images, *From the Earth to the Universe*, which was on public display in front of the Center during December 2009 and January 2010. It is estimated that several thousand students and campus visitors viewed the display.

Kate Coleman and Adam Hughes were selected as GK-12 Fellows for the 2009-2010 academic year. This program matches graduate students in the sciences and engineering with sixth and seventh grade teachers in local Arkansas school districts.

David Blackburn interned at the Jet Propulsion Lab during summer 2009 and summer 2010, analyzing data returned from the Cassini mission to Saturn. He was joined at JPL in 2010 by Scott Barrows, studying galactic astronomy, and Jennifer Hanley, who is studying the spectra of salt hydrates at low temperature. Cassie Marnocha was awarded a travel grant from the Abisko Scientific Research Station in Swedish Lapland, renewable for three years. She will be conducting field work in Kärkevagge, a valley near Abisko that represents a geochemical and mineralogical Mars analog.

Two student teams participating in the Freshman Engineering Honors Research Symposium were supported by the Center. In the Aerospace Systems Track, the team of Tyler Bowman and Trent Chudej won both the Best Paper award and the Best Presentation award for their research "Window Scratch Testing for the Optical Probe for Regolith Analysis (OPRA). The team of Preston Boyd and Bailey Moll won the Best Poster award for "Analysis of Potential Ideas for Optical Probe for Regolith Analysis (OPRA)."

3.2 Achievements of Space Center Alumni

- Melissa Franzen Jones (PhD SPAC 2006) is a member of the Mission Design Group at the Jet Propulsion Laboratory in Pasadena, California. She was also selected to give the 2009 commencement address at her alma mater, Loras College.
- Julie Chittenden (PhD Chemistry 2006) is currently working as a researcher at the NASA-Ames Research Center in California.
- Katie Bryson (PhD SPAC 2008) is a post-doctoral researcher at NASA-Ames Research Center.
- Laurie Darling (MS SPAC 2006) is with the Flight Design and Dynamics Division of NASA-Johnson Space Center in Houston, in charge of the operations of non-US vehicles with the International Space Station.
- Lisa Billingsley (MS SPAC 2007) is currently enrolled in the PhD program at the University of Oklahoma.
- Obadiah Kegege (PhD SPAC 2009) is a Senior Engineer with the Systems Engineering and Analysis Branch at NASA-Glenn Research Center.
- Henry Turner (PhD SPAC 2009) is a member of the Geosciences faculty at the University of Arkansas.
- Shelly Bursick (PhD SPAC 2009) is a post-doctoral researcher at UC-Riverside.

Cell and Molecular Biology

The CEMB program currently has 85 faculty (3 new faculty were added this year). Dr Douglas Rhoads continues as program director completing his fourth consecutive year. His second term is due to expire in May 2012.

The program should be approximately $200 under budget for the 2010 fiscal year on total support of $134,000. Current commitments for FY2011 are $96,938 for RA support, on an anticipated budget of $140,795.

The program continues to grow in faculty, and maintain a relatively constant population of graduate students. Since many of the graduate students are supported on grants or departmental assistantships (not program), the size of the graduate student population can not grow without new grants, which is not likely during this economic downturn. Despite these dire economic times, the faculty and students have been productive in obtaining grants, publishing articles, presentations at national meetings, and recognition of research accomplishments.

Plans for the coming year are to maintain the program, evaluate student progress, and refine program operating procedures. During Fall 2009 the program submitted a proposal to establish a NSF REU targeting HBCU undergraduates. Although the proposal received high scores it was not funded (ranked 33 out of 100 proposals with 30 funded). The program director was highly positive and recommended that a revised proposal be submitted in August 2010. The program was scheduled to be reviewed in Spring 2010 but that has been postponed until Fall 2010.

Student Demographics (counts)

	Com-pleted	Admissions		Current Population	Male	Female	US Citizen	Inter-national
		New	In Progress					
MS	1	9	4	17	6	11	3	14
PhD	6	9	4	49	23	26	15	34

Student Support (counts)

Federal (grants, training programs)	12
Local (State funded research assistantships)	32
Teaching (Departmental Teaching Assistantships)	9
NonSupport (International students on Fulbright, home government or foreign institutional sponsorships)	13
	66

Departmental Distribution of Students and Funds in dollars

Department	Code	MS	PhD	total	RA Funds Spent
Biological Sciences	BISC	6	15	21	38135
Chemistry Biochemistry	CHBC	4	4	8	21690
Mathematical Sciences	MATH	0	0	0	0
Plant Pathology	PLPA	0	6	6	15500
Entomology	ENTO	0	1	1	8300
Poultry Science	POSC	3	10	13	16640
Biological & Agricultural Engineering	BAEG	3	5	8	7150
Nursing	NURS	0	0	0	0
Chemical Engineering	CHEG	0	3	3	0
Food Science	FDSC	0	1	1	7500
Physics	PHYS	0	0	0	0
Crop Soil &Environmental Science	CSES	1	4	5	18870
Horticulture	HORT	0	0	0	0
Animal Science	ANSC	0	0	0	0
Computer Science & Engineering	CSCE	0	0	0	0
Health Kinesiology Recreation and Dance	HKRD	0	0	0	0
	Sum	17	49	66	133785

FACULTY AND STUDENT ACTIVITIES

Noncompetitive funding renewal:

Chen P; Blue Horizon, Inc and Toyota Tsusho Corporation; "Breeding soybeans for tofu and natto production"$300,000; 2007-2012.

Erf G; Arkansas Biosciences Institute Grant Program – Agriculture, Year 2 (2009/2010) of 3; "Environmental Triggers of Autoimmune Vitiligo Expression in Susceptible Smyth Line Chickens" – $50,000/year.

Henry R, TKS Kumar, and R Goforth. DOE "Protein Targeting to the Chloroplast Thylakoid Membrane: Structure of a chloroplast signal recognition particle. "; 8/2001- 07/2010 $450,000 total ($150,00 yr 3)

Lehmann M; NIH 1R15DK079277-01 "The Control of Growth and Metabolism by Effectors of the TOR Signaling Pathway" $ 150,000; 08/09/07 - 07/31/10

Lehmann M; NSF IOS-0641347; "Function of Cell Identity Factors in Tissue-Specific Programmed Cell Death" $ 330,000; 05/01/07 - 04/30/10

Srivastava V; NSF "Role of Ascorbate in Mitigating ER and Cellular Stress Associated with Transient and Stable Plant-Based Protein Production"; $75,953; 5/1/08–8/31/10

Stenken J; NIH RO1 EB001441-05A1 {Renewal} , Quantitative Biocompatibility of Implanted Materials. NIH;: 7/1/07 to 6/30/11 $800,000 (direct)

Thallapuranam TKS; National Institutes of Health – NCRR P20RR15569 (COBRE-program project) "Structural Characterization of the Fibroblast Growth Factor Signaling Complex. 7/1/05–6/30/10). $450,000. PI of the sub-project. Program Project PI- Frank Millett..

Competitive new grants*:*

Cox M; USDA/SARE- graduate student research award; "Microbial changes associated with use of brassica cover crops compared to traditional production systems for strawberry."; 2009-2010; $9971.

Du Y; 1R03CA135549-01A1 NIH/NCI; 07/01/2010 – 6/30/2012; $144,000; Proteomic and functional studies of mitochondrial proteins involved in ROS metabolism in pancreatic cancer

Du Y; 3P20RR015569-10S2 NIH/BCRR; Frank Millett (PI); 08/18/2009 – 08/17/2011; $854,803 (total budget for the whole project); COBRE: Adm supplement for "Exploring novel strategies to prevent and treat viral infection."

Durdik J; NIH R03 AI070312-01A2 "Cell biology of T lymphocyte aging"; 7/1/09-6/30/11; $142,000

Koeppe R and D Greathouse. National Science Foundation MCB 0841227; July, 2009 - June, 2012 "Intrinsic Tilt of Transmembrane Helices" $188,892 first year. $580,293 total.

Kong BW; DBCAFLS Research Incentive Grants. $10,000. 7/01/2009-12/31/2010. Identification of virus encoding microRNA for infectious laryngotracheitis virus (ILTV).

Kong BW; Division of Agriculture Arkansas Biosciences Institute, $45,000, 7/01/2009-06/30/2010. Host-virus interactions of infectious laryngotracheitis virus (ILTV) in chickens.

Kong BW; USDA Animal Health Project. $25,000. 10/01/2009-9/30/2010. Bacterial Artificial Chromosome (BAC) clone for infectious laryngotracheitis virus (ILTV).

Korth KL, P. Chen and R. Cartwright. Arkansas Soybean Promotion Board. "An analytical approach to assessing salt tolerance in soybean." 3 years, $182,000

Kumar TKS, A Daily, D McNabb. Arkansas Biosciences Institute "Development of a novel antifungal treatment against the pathogen C. albicans." $70,000 (07/01/09 to 05/31/10)

Kwon YM; Arkansas Biosciences Institute "Isolation of RNA aptamers inhibiting Salmonella virulence";7/1/2009-6/30/2010; $40,000

Kwon YM; USDA Food Safety Consortium "Role of protozoa in poultry drinking water in transmission of Campylobacter jejuni"; 7/1/2010-6/30/2011; $45,000

Lessner D; Arkansas Biosciences Institute "Acquisition of Equipment for the Large-Scale Cultivation of Anaerobic Microorganisms and Purification of Oxygen-Sensitive Biomolecules." 06/01/09-05/31/10, $34,000

Li Y, Huang T and Lu H; USDA/NRI #2009-35603-05063; "Nanowire Switch and Nanoelectrode/ Nanofluidics Based Biosensor for Rapid Screening of Avian Influenza Virus"; 1/2009 – 1/2010; $455,308

Li Y; ABI "Aptamer SPR Biosensor for Rapid Detection of Avian Influenza Virus" 7/2009 – 6/2010; $50,000

Millett F, B Durham; NIH 2R01GM020488-35A1, Electron Transfer Proteins", 9/21/2009 – 8/31/2011. Annual costs: $292,655, Total costs: $585,310 Objective: The major goal of this project is to develop new ruthenium rapid kinetic techniques to study mitochondrial electron transfer.

Pinto I; Arkansas Biosciences Institute "The role of histone H2B in centromere function and chromosome segregation." $31,900; 7/1/2009-5/31/2010.

Rhoads D and S Beaupre. Pilot-scale High Throughput Sequencing of the Timber Rattlesnake Genome. Arkansas Biosciences Institute, 7/09-6/10; $57,200.

Ruan C and Li Y; NSF/STTR "Development of Aptamer-ssDNA Intelligent Hydrogel Materials for Magnetoelastic Detection of Avian Influenza Virus"; 7/2009 – 6/2010; $150,000

Song JJ, and Kong BW; University of Arkansas Arkansas Biosciences Institute. $49,224, 7/01/2009-06/30/2010. Analytic-enabled integrative analysis of microarray studies.

Stites W; Arkansas Biosciences Institute; "Purification and characterization of recombinant von Willebrand factor"; 7/1/2009-5/31/2010; $53,282

Tebeest DO; Syngenta $2,500; Chemtura, $14,000; Bayer CropScience $9,000; Rice Research and Promotion Board, $60,000.

Thallapuranam TKS; National Institutes of Health (RO1 - 2 R01 HL035627). Release of FGF1 and pathology of angiogenesis. $690,000. 07/01/09-07/31/12. PI – Igor Prudovsky (Maine Medical Research Institute).

Thallapuranam TKS; NIH 3P20RR015569-10S2. "Exploring Novel Strategies to Prevent and Treat Viral Infection." $850,000. 08/01/09-07/31/11 Role – Lead Investigator, PI – Frank Millett

Thallapuranam TKS; Arkansas Biosciences Institute. "A multiuser computation and visualization facility for protein structure and function. $74,759. 06/01/09–05/30/10. Role - co-PI. PI - Dr. Hinton.

Thallapuranam TKS; Arkansas Bioscience Institute. "Rational design of a novel peptide drug against pathogenic fungi. " $99,165. 7/1/09-6/30/10. Role – PI. Co-PIs – A Daily, and D McNabb.

Thallapuranam TKS; NSF IOS084397 "Central Neuroplasticity of the Avian Vasotocinergic system during stress. $348,473. 09/01/09–08/31/2012. Role co-PI (PI – Alexander Jurevich).

Thallapuranam TKS; Department of Energy. "Protein targeting to the chloroplast thylakoid membrane: Structure and Function of a targeting complex." $495,000. 08/15/10-08/14/13. Role co-PI (PI- Ralph Henry).

Tzanetakis I; Arkansas Soybean Promotion Board; Epidemiology of Sybean vein necrosis virus; $33,000; 1/2010 – 12/2010

Winsett, K.; NSF GK-12 Fellowship 2008-2010; Grant from the Big Thicket Association to lead the slime mold inventory for the Big Thicket National Preserve All Taxa Biodiversity Inventory. $3600.00.

Yu D; 3R15GM087671-01S1; NIH; 05/15/2010 – 04/30/2011; $118,054; Adm supplement for "Proteomic and biochemical studies of Bax regulatory proteins in apoptosis"

Peer-reviewed Publications:

Akbubak MA, More, A, Nandy S, Srivastava V (2010) Dosage-dependent gene expression from direct repeat locus in rice developed by site-specific gene integration. Mol. Biotechnol. 45:15–23.

Dong, L., R. L. Dienglewicz, and G. F. Erf. 2010. Pigmented growing feathers form autoimmune vitiligo-prone Smyth line chickens have heightened sensitivity to 4-tertiary butyl phenol. J. Immunol. 182: 83.19 (Abstr.)

Hesse J, Faulkner M, Durdik J. 2009. Increase in double-stranded DNA break-related foci in early-stage thymocytes of aged mice. Exp. Ger.44(10):676-84. PMID: 19602431.

Kannan L, Rath N.C, Liyanage R, Lay J.O Jr. Evaluation of beta defensin 2 production by chicken heterophils using direct MALDI mass spectrometry Mol. Immunology, 46: 3151-3156, 2009.

Lee, J. S., Song, J. J., Deaton, R., and Kim, J.-W. (2009), Exploring the Potential of Microarray Technology for Bio/Nano Sensing'", Proceedings of the 2009 4th IEEE International Conference on Nano/Micro Engineered and Molecular Systems, 1065-1068.

Liyanage, R, N. Devarapalli, L. M. Puckett, N. H. Phan, J. Gidden, W. E. Stites, and J. O. Lay, Jr. "Comparison of Two ESI MS Based H/D Exchange Methods for Extracting Protein Folding Energies " Int. J. Mass Spectrom. 287 96-104 (2009).

Mattoo H, Faulkner M, Kandal U, Lewis V, Geroge A, Rath S, Durdik J, Bal V. 2009. Primary activation of naïve CD4 T cells from aged mice leads to increased cell death and poor central memory phenotype. Int. Imm. PMID: 19748905.

Moore, J.W., M. Ditmore and D.O. TeBeest. 2009. The effects of cropping history on grain sorghum yields and anthracnose severity in Arkansas. Crop Protection 28:737-743.

Moore, J.W., M. Ditmore and D.O. TeBeest. 2010. Development of anthracnose on grain sorghum hybrids inoculated with recently described pathotypes of *Colletotrichum sublineolum* found in Arkansas. Plant Disease. 94:589-595.

Navia-Giné, W.G., Gomez, S.K., Yuan, J., Chen, F., & Korth, K.L. (2009) Insect-induced gene expression at the core of volatile terpene release in Medicago truncatula. Plant Signaling and Behavior. 4: 636-638.

Navia-Giné, W.G., Yuan, J.S., Mauromoustakos, A., Murphy, J.B., Chen, F. & Korth, K.L. (2009) Medicago truncatula (E)-β-ocimene synthase is induced by insect herbivory with corresponding increases in emission of volatile ocimene. J. Plant Physiol. Biochem. 47:216-425.

Rachamadugu R, Lee YM, Wooming A, and Kong BW. 2009. Identification and expression analysis of infectious laryngotracheitis virus encoding microRNAs. Virus Genes. 39:301–308.

Shadwick LL, Spiegel FW, Shadwick JDL, Brown MW, Silberman JD (2009) Eumycetozoa = Amoebozoa?: SSUrDNA Phylogeny of Protosteloid Slime Molds and Its Significance for the Amoebozoan Supergroup. PLoS ONE 4(8): e6754. oi:10.1371/journal.pone.0006754

Shivrain, V.K., N.R. Burgos, D.R. Gealy, M.A. Sales, and K.L. Smith. 2009. Gene flow from weedy rice (Oryza sativa L.) to cultivated rice and fitness of hybrids. Pest Manag. Sci. DOI 10.1002/ps.1802

Shivrain, V.K., N.R. Burgos, M.A. Sales, A. Mauromoustakos, D.R. Gealy, K.L. Smith, H.L. Black, and M. Jia. 2009. Factors affecting the outcrossing rate between ClearfieldTM rice and red rice (Oryza sativa). Weed Sci. 57:394-403.

Shivrain, V.K., N.R. Burgos, M.A. Sales, and Y.I. Kuk. 2010. Polymorphisms in the ALS gene of weedy rice accessions with different tolerance to imazethapyr. Crop Prot. 29(4):336-341 doi:10.1016/j.cropro.2009.10.002

Stepicheva, N. A., R. Liyanage, J. O. Lay, R. L. Dienglewicz, and G. F. Erf. 2010. Abnormal morphology of melanosomes in the autoimmune vitiligo-prone Smyth line chicken does not appear to be due to alteration in lipid composition. J. Immunol. 182: 83.16 (Abstr.)

Tiwari N, L Woods, A Kight, R Haley, R Goforth, K Clark, M Ataai, RL Henry, R Beitle (2010). Identification and characterization of native proteins of *Escherichia coli* BL-21 that display affinity towards Immobilized Metal Affinity Chromatography and Hydrophobic Interaction Chromatography Matrices. Protein Expression and Purification, 70(2):191-5

Peer reviewed publications submitted or in press:

Fakunle, E. S.; Fritsch, I. "Low Temperature Co-fired Ceramic Microchannels with Individually-Addressable Screen-Printed Gold Electrodes on Four Walls for Self-Contained Electrochemical Immunoassays", Anal. Bioanal. Chem. (in revisions due for resubmission June 14, 2010).

Kanayeva, D., R. Wang, B. Srinivasan, S. Tung, and Y. Li. 2010. Detection of Listeria monocytogenes using microfluidics and interdigitated microelectrode based impedance immunosensor coupled with magnetic nanoparticle–antibody conjugates. J. Food Prot. (in review)

Kannan, L, N. C. Rath, R. Liyanage, and J.O. Lay. Effect of toll-like receptor activation on thymosin beta 4 production by chicken macrophages. Molecular and Cellular Biochemistry (submitted, under consideration)

Kannan, L, R. Liyanage, and J.O. Lay, and N.B. Anthony, and Rath , NC. MALDI MS Identification and Characterization of Pheasant and Quail Avian Beta Defensin 2. (submitted)

Leona N. Calhoun, and Y. M. Kwon. 2010. The effect of long term propionate adaptation on the stress resistance of Salmonella Enteritidis. J. Appl. Microbiol. (accepted)

Park, S.H., I. Hanning, R. Jarquin, P. Moore Jr., D.J. Donoghue, A.M. Donoghue, and S.C. Ricke. 2010. Development and comparison of polymerase chain reaction based assays for the simultaneous detection and quantification of Campylobacter spp., Escherichia coli O157:H7 and Salmonella spp. from water samples. Water Res. (Submitted)

Von Grote EC, V. Venkatakrishnan, J. Duo, and J. A. Stenken, Microdialysis sampling and qRT-PCR validation of MCP-1, IL-6 and IL-10 in subcutaneous foreign body reaction in rats. Submitted to: Molecular Biosystems

Patents filed:

Li, Y., R. Wang, T. Jiang, Y. Kwon and J. Zhao. 2010. Avian Influenza H5N1 Specific Aptamers and Uses Thereof. US Patent Application filed on May 20, 2010.

Presentations:

Akbudak MA, Srivastava V (2010) Dosage dependent gene expression from direct repeat locus in rice developed by site-specific gene integration. Plant and Animal Genome XVIII Conference, San Diego, CA, Jan 9-13, 2010.

Al-Rubaye AK, NB Anthony, RF Wideman, and DD Rhoads. Using Quantitative PCR to Investigate Three Candidate Genes Related to Pulmonary Hypertension in the Chicken. Plant and Animal Genome, San Diego, CA, Jan 2010

Al-Rubaye AK, S Krishnamoorthy, N Anthony, GF Erf, RF Wideman, DD Rhoads. Genetic Analysis of Pulmonary Hypertension and Ascites in the Chicken. USDA NC1170 workshop, San Diego, CA, Jan 2010.

Bajpai G. and Lessner DJ. 2009. "Assessment of the tolerance of the anaerobic archaeon Methanosarcina acetivorans to oxidants" INBRE research conference. Fayetteville, AR Oct. 23-24 2009.

Bates, L., K.E. Cano, C. Padilla, and D.S. McNabb. “The role of multiple CCAAT-binding factors in Candida albicans”. 2009 INBRE Conference, University of Arkansas, Fayetteville, AR, October 2009.

Calhoun, L. N., and Y. M. Kwon. 2010. The ferritin-like protein Dps protects against the Fenton-mediated killing mechanism of bactericidal antibiotics in S. Enteritidis. 110th General Meeting of the American Society for Microbiology, May 23-27, San Diego, CA.

Chaudhuri, P. Rhoads, M. and I. Pinto. 2009. Set1 methyltransferase and its role in centromere function. 2009 INBRE Conference , Fayetteville AR.

Chism PB, Bajpai G, Lessner FH, and Lessner DJ. 2009. "Over-expression of a putative oxidative stress protein in a strictly anaerobic methane-producing archaeaon" INBRE research conference, Fayetteville, AR Oct. 23-24 2009.

Dong, L., R. L. Dienglewicz, and G. F. Erf. 2010. Pigmented growing feathers form autoimmune vitiligo-prone Smyth line chickens have heightened sensitivity to 4-tertiary butyl phenol. Immunology 2010, 97th Annual meeting of the American Association of Immunologists, May 7-11, 2010, Baltimore, MD

Erf, G. F., L. Dong, M. Heidari, B. Kong, N. Rath, and C. Cramer. 2009. ABI grant update. Environmental triggers of autoimmune vitiligo expression in susceptible Smyth line chickens. ABI meeting Jonesboro, AR, October, 2009.

Faulkner M. Cell biology of T lymphocyte aging. Georgia Tech, Dept of Biological Engineering Feb 11, 2010.

Flack BR, and DD Rhoads. Genetic Analysis of Signaling Genes for Affects on Egg Production in the Domestic Chicken (Gallus gallus). Plant and Animal Genome, San Diego, CA, Jan 2010

Froyd-Rankenberg JM, DV Greathouse, RE Koeppe II. (2010) Influence of WALP Peptides on Phase Behavior of Cholesterol Containing Ternary Lipid Mixtures. Biophysical Society 54th Annual Meeting, San Francisco, CA; February, 2010. Biophys. J. 98(3), 91a.

Jia Y, G Liu, S Costanzo, S Lee, Y Dai, MR Chowdhury, M Jia, F Lee, J Correll, R Cartwright, R Fjellstrom, A McClung, S Tavantzis, B Reyes, G Wang, Y Yang, X Wang, Z Wang, JK Xie, E Zhou, Y Peng, C Lei, J Wan, and M Yu.. 2009. Crop Disease Resistance, Promises and Challenges. Presented at Bush-China Relations conference, Beijing, October, 2009

Kanayeva, D., R. Wang, and Y. Li. 2009. Immunomagnetic separation of Listeria monocytogenes using nanosized beads. Presented at IAFP 2009 96th Annual Meeting, July 12-15, 2009, Grapevine, TX. Poster No. P2-097.

Kanayeva, D., R. Wang, B. Srinivasan, S. Tung, and Y. Li. 2010. Detection of Listeria monocytogenes using microfluidics and interdigitated microelectrode based impedance immunosensor coupled with magnetic nanoparticle-antibody conjugates. Presented at ASM (American Society for Microbiology) 110th General Meeting, May 23-27, 2010, San Diego, CA. Paper No. 10-GM-A-3797-ASM.

Khatiwara, A., B. M. Hargis, and Y. M. Kwon. 2010. Development of a method to enhance the surface display of an epitope in bacteria vectored vaccine for necrotic enteritis. 110th General Meeting of the American Society for Microbiology, May 23-27, San Diego, CA.

Khatiwara, A., S. L. Layton, G.Tellez, L.R. Berghman, B.M. Hargis and Y.M. Kwon. 2009. Development of bacteria-vectored vaccines for necrotic enteritis. American Association of Avian Pathologists, Seattle, WA, July 12-15, 2009

Kim, J. N., and Y. M. Kwon. 2010. Characterization of RyhB-target interaction by random point mutagenesis. 110th General Meeting of the American Society for Microbiology, May 23-27, San Diego, CA.

Krishnamoorthy S, DD Rhoads, and NB Anthony. Identification of Microsatellite Markers Associated with Ascites Susceptibility in Commercial BroilersPlant and Animal Genome, San Diego, CA, Jan 2010.

Kannan L, R. Liyanage, N. C. Rath, and J. O. Lay. Effect of toll-like receptor agonists on thymosin beta 4 (Tb4) production by chicken macrophages" at 58th American Society of Mass Spectrometry, Salt Lake City, UT, May 2010.

Lee JY, Song JJ, Zhou H, and Kong BW. Transcriptional profiling of host gene expression by the infection of laryngotracheitis virus in chicken embryo lung cells. 2009. Annual Meeting of American Society for Virology, Vancouver, Canada

Lee, J. S., Song, J. J., Deaton, R., and Kim, J.-W. (2009). Exploring the potential of microarray technology for bio/nano sensing, The 4th Annaul IEEE International Conference of Nano/Micro Engineered and Molecular Systems (IEEE-NEMS-2009), Shenzhen, China.

Lewis, NE, NJ. Marty, T Bals, KM Kathir, D Rajalingam, AD Kight, A Daily, BD Ãnschede, A Varas, TKS Kumar, RL Goforth, D Schanemann, and RL Henry: A Dynamic CpSRP43-Albino3 Interaction Mediates Translocase Regulation of CpSRP Targeting Components. Gordon Conference-Protein transport Across Cell Membranes, March 2010, Galveston TX

Liyanage R; N Devarapalli; L M Puckett; NH Phan; JA Starch; J Gidden; WE Stites; JO Lay. 'Protein Equilibrium Population Snapshot (PEPS) MS method for Measuring Protein Folding Energies using H/D exchange and Oxidation of Methionine" 57th American Society of Mass Spectrometry, Seattle, WA (2009)

Navia-Giné, W., Rafiei Boroujeni, F., Nelson, L.D., & Korth, K.L. (2009) Potential antagonism of JA- and SA-induced defenses in Medicago truncatula. International Society of Plant Molecular Biologists, St. Louis, MO in October, 2009

Navia-Giné, W.G., Rafiei Boroujeni, F., Korth, K.L. (2010) Analysis of the response of Medicago truncatula calcium oxalate mutants to salt stress. Plant and Animal Genome XVIII Conference, San Diego, CA in January 2010

Nguyen DT and Kavdia M. SIRT1 inhibition induces oxidative stress in endothelial cells. Submitted for Biomedical Engineering Society (BMES). Annual Fall Meeting, October, 2010.

Padilla, C, L.L. Bates, and D.S. McNabb. The CCAAT-binding factor from Candida albicans regulates CYC1 expression in response to iron limitation. Southeastern Regional Yeast Meeting, March 12-14, 2010, Little Rock, AR

Padilla, C., L. Bates, and D.S. McNabb. "The CCAAT-binding factor from Candida albicans regulates CYC1 expression in response to iron limitation." 2009 INBRE Conference, University of Arkansas, Fayetteville, AR, October 2009.

Park, S.H., I. Hanning, R. Jarquin, P. Moore, D.J. Donoghue, A.M. Donoghue and S.C. Ricke. 2010. Development and comparison of polymerase chain reaction based assays for the simultaneous detection and quantification of Escherichia coli O157:H7, Salmonella and Campylobacter from water samples. Amer. Soc. Microbiol. General 110th Annual Meeting, San Diego, CA.

Rachamadugu R, Lee YM, Wooming A, and Kong BW. Identification of infectious laryngotracheitis virus encoding microRNAs and their targets in host and viral genome. 2009. Annual Meeting of American Society for Virology, Vancouver, Canada

Rangani G, Srivastava V (2010) Role of chromatin modifiers in exonic methylation-mediated transcriptional silencing of Arabidopsis phyA' epiallele. Annual conference of Society of In Vitro Biology, St Louis, June 6-11, 2010.

Rogers SC and Kavdia M. DHE Fluorescence Measurements from Hyperglycemic Endothelial Cells. Biomedical Engineering Society (BMES). Annual Fall Meeting, October, 2009.

Rogers SC and Kavdia M. Mechanistic study of nitric oxide bioavailability in hyperglycemic HUVEC's using DAF-FM-DA. Experimental Biology, Anaheim, CA, 2010.

Rogers SC and Kavdia M. Superoxide increases in hyperglycemic endothelial cells using DHE fluorescence: Is it production or concentration? SFRBM Annual Meeting, 2009.

Saengkerdsub, S., J.M. Lingbeck, S.H. Park, A. Muthaiyan, and S.C. Ricke. 2010. Initial screening of methionine-producing bacteria for organic poultry feed. Amer. Soc. Microbiol. General 110th Annual Meeting, San Diego, CA. (Poster presentation).

Sharma MV, SK Kantartzi, D Weaver, and JM Stewart. Genotyping and Association Analysis of Gossypium hirsutum Lines for ResistanceReniform Nematodes. Crop Science Society of America, Pittsburg, PA, Nov 2009.

Sharma MV, SK Kantartzi and JM Stewart. Molecular Genotyping Of Gossypium hirsutum Lines With Resistance To Reniform Nematodes. Plant and Animal Genome XVIII, San Diego, CA Jan 2010.

Singh, P., and Y.M. Kwon. 2009. Genetic diversity of Campylobacter populations in chicken ceca. Poultry Science Association annual meeting, Raleigh, NC, July 20-23. 2009.

Stepicheva, N. A., R. Liyanage, J. O. Lay, R. L. Dienglewicz, and G. F. Erf. 2010. Abnormal morphology of melanosomes in the autoimmune vitiligo-prone Smyth line chicken does not appear to be due to alteration in lipid composition. Immunology 2010, 97th Annual meeting of the American Association of Immunologists, May 7-11, 2010, Baltimore, MD

Tseng, T.M., Burgos, N.R., Alcober, E.A., & Shivrain, V.K. (2009). Variations in seed dormancy of weedy rice directly harvested from rice fields in Arkansas. WSSA-SWSSA Annual Meeting. Feb. 9-13, 2009. (Oral)

Tseng, T.M., Burgos, N.R., Alcober, E.A., & Shivrain, V.K. (2009). Variations in seed dormancy of weedy rice directly harvested from rice fields in Arkansas. Gamma Sigma Delta 11th Annual Student Competition. Feb. 25th, 2009. (Oral)

Tseng, T.M., Burgos, N.R., Alcober, E.A., Shivrain, V.K., Motes, D., & Morelock, T. (2009). Tolerance of advanced cowpea (Vigna unguiculata) lines to sulfentrazone herbicide. WSSA-SWSSA Annual Meeting. Feb. 9-13, 2009. (Poster)

Tseng, T.M., S. Fogliatto, N. R. Burgos, E. A. L. Alcober, L. E. Estorninos, and R. A. Salas. (2009). The effect of after-ripening time and dormancy release in red rice seeds from Arkansas. Arkansas Crop Protection Association 13th Annual Meeting. (Oral)

Venkatakrishnan, V, E Von Grote, JA Stenken. *In vivo Measurement of Cytokines during Foreign Body Response using Microdialysis in Sprague – Dawley Rat Model.* Presented at the 2010 Society for Biomaterials Conference, April 2010, Seattle, Washington.

Winsett, K. Workshop leader. "Introduction to the Myxomycetes". 2 day workshop at the Big Thicket National Preserve. May 2010.

Zhao, J., R. Wang, T. Jiang, Y. Kwon, and Y. Li. 2010. In vitro selection of aptamers for detection of avian influenza virus H5N1. Presented at ASM (American Society for Microbiology) 110th General Meeting, May 23-27, 2010, San Diego, CA. Paper No. 10-GM-A-3820-ASM.

Research Recognition Awards

Akbudak MA, Winner in Molecular Biology category, Abstract to Contract Student Presentation Competition, University of Arkansas Graduate School, AR, USA.

Chodhury MR, First Place for Graduate Student Paper Award, 2010, American Phytopathological Society, Southern Division.

Chowdhury M, first prize winner for student paper at the Southern Division of American Phytopathogical Society held in Orlando in February**.**

Faulkner, M, Outstanding Teaching Assistant, Department of Biological Sciences 2010

Kanayeva D, won the award ($500) of the Corporate Activities Program Student Travel Grant of ASM (American Society for Microbiology) 2010 Annual Meeting, May 23-27, 2010, San Diego, CA. Her presentation title is “Detection of Listeria monocytogenes using microfluidics and interdigitated microelectrode based impedance immunosensor coupled with magnetic nanoparticle-antibody conjugates”.

Kanayeva D, won the second place of the 2010 Student Research Presentation Oral Competition (Ph.D.) sponsored by the Arkansas Chapter of Gamma Sigma Delta, March 2, 2010, Fayetteville, AR. Her presentation title is “Detection of Listeria monocytogenes using microfluidics and interdigitated microelectrode based impedance immunosensor”.

Navia-Giné W, was awarded a competitive travel grant from the International Society of Plant Molecular Biologists to present her work at their meeting in St. Louis, MO.

Park SH, received a travel grant for attending and presenting his research at the Amer. Society for Microbiology General 110th Annual Meeting, San Diego, CA.

Rangani G, received a travel grant ($400) from Society of In Vitro Biology for attending the annual conference in St Louis, June 6-11, 2010.

Rogers S, First prize for the poster competition in UA Graduate Reseach Symposium Spring 2010.

Tseng T, 2nd place, graduate student oral presentation. Arkansas Crop Protection Association 13th Annual Conference. Nov. 30th – Dec 1st, 2009.

Wang, Y, received the G. T. Johnson Memorial Endowed Scholarship for Outstanding First Year Graduate Student Fall 2009.

Student Placement

Bates L, PhD 2009 Instructor Northwest Arkansas Community College
Calhoun L, PhD 2010 Post-doctoral fellow at University of Texas Southwestern
Danforth R. PhD 2009 Postdoctoral University of Houston
Faulkner M. PhD 2010 Post-doctoral fellow at Georgia Tech University
Gomez K, PhD 2005 Tenure track Assistant Professor University of Texas Tyler
Kannan L, PhD 2009 accepted a post doctoral position in Immunology at Beth Israel, Harvard Medical School
Lee, JS, PhD 2009 Post-doctoral fellow at University of Arkansas
Shadwick L, PhD 2010 Post-doctoral fellow at University of Barcelona
Tinsley N, MS 2009 Pharmacy School UAMS
Wu X, PhD 2009 Consultant for IRISYS Inc.
.

Office for the Studies on Aging

The Office for the Studies on Aging (OSA) was established in August 1999 to explore educational, community service, and research issues and needs related to aging and older persons. The mission of the OSA is to coordinate university resources to address gerontology needs and to facilitate better community interface between university resources and the needs of older adults.

In its eleventh year of operation, the Office for Studies on Aging has continued to be proactive in reaching out to the university community and into Northwest Arkansas to identify needs and to target resources that may respond to those needs.

In the spirit of the mission of the OSA, the following initiatives were completed this year.

Campus and Community Collaborations

- The Office for Studies on Aging hosted a small group workshop and reception with attendees from throughout the University. The purpose of this workshop was to cultivate ideas on what role the University of Arkansas will play in the coming years in respect to aging.

- Continuation of collaboration with Area Agency on Aging and facilitation of interactive projects involving University and AAA.

- The Office for Studies on Aging attended the Arkansas MAPs (Mapping Aging Policies of the State) meeting. This meeting included both University personnel and state-wide agencies involved in aging policies and services.

- Co-Directors represent OSA and College of Education and Health Professions on Gerontology Certificate Steering Committee.

Current Research

- The Office for Studies on Aging began the analysis of data collected about CNAs as caregivers. This data was collected through focus groups at four different locations.
    - November 14, 2008: Butterfield Trail Village, Fayetteville, AR
    - February 13, 2009: Homestyle Assisted Living, Springdale, AR
    - April 10, 2009: City Hospital, Fayetteville, AR
    - April 17, 2009: North Hills Rehabilitation, Fayetteville, AR

- The Office for Studies on Aging analyzed data from the surveys that were sent to both administrators and CNAs at 238 long term care facilities in Arkansas focusing on CNA training and hierarchy at the workplace.

Grants

- Devareddy, L., Di Brezzo, R. (2008-11). Role of Anti-Oxidant Rich Berries in Prevention of Bone Loss in Postmenopausal Women. $120,000. ($45,000 for first year).
- Alzheimer's Association.
- American Federation on Aging.

Gerontology Certificate

- A Ph.D. program in Public Policy with a concentration in Aging Studies was developed. The program currently has two students enrolled.

Abstracts

- Di Brezzo, R., Shadden, B., Glave, P., Powers, M., & Gray, M. (2009). Caregiving and perceptions of health. *Medicine and Science in Sports and Exercise. 41* (5), 2767.
- Henry, J., Shadden, B., Di Brezzo, R. (2009). An examination of salivary cortisol sampling protocol for assessing impact of stress on caregivers. *The Gerontological Society of America.*

Presentations – Invited

- Di Brezzo, R. (2009). Countdown to retirement: Aging well in retirement. Human Resources, University of Arkansas.
- Shadden, B. B. (September, 2009). Getting ready for the Baby Boomers: What do SLPs need to know? Full day workshop presented to the regional MACDG Association, St. Louis, MO.

Presentations – Submitted and Accepted

- Henry, J., Shadden, B, Di Brezzo, R., & Fort, I.L. (2009). An examination of salivary control sampling protocol for assessing impact of stress on caregivers. Gerontological Society of America, National Meeting, Atlanta, GA: November 18-22, 2009.
- Di Brezzo, R., Shadden, B., Glave, P. Powers, M., Gray, M (2009). Caregiving and Perceptions of Health. American College of Sports Medicine National Convention, Seattle, WA.
- Leszczak, T., Di Brezzo, R., Evanson, K., Glave, P. (May 2009). Differences Between Two Exercises Programs on Measuring Fall Risk in Older Adults. American College of Sports Medicine National Meeting, Seattle, WA.

Chapters – Authored

- Turner, L., Hunt, S., Di Brezzo, R., Jones, C. (2009). Design and Implementation of an Osteoporosis Prevention Program Using the Health Belief Model. In: *Introduction to Health Behavior Theory.* Sudbury, MA: Jones and Bartlett Publishers.
- Shadden, B. B. (2010, in press). Language and aging: Primary and tertiary factors. Chapter 9 in M.A. Toner, B. B. Shadden, & M. Gluth (Eds.), *Communication and aging: For clinicians by clinicians* (2nd Ed.). Austin, TX: ProEd.
- Shadden, B.B. (2010, in press). Language and aging. Secondary factors: Language disorders in older adults. Chapter 10 in M.A. Toner, B. B. Shadden, & M. Gluth (Eds.), *Communication and aging: For clinicians by clinicians* (2nd Ed.). Austin, TX: ProEd.
- Shadden, B. B., & Toner, M.A. (2010, in press). Counseling and clinical interactions with older clients and caregivers. Chapter 12 in M.A. Toner, B. B. Shadden, & M. Gluth (Eds.), *Communication and aging: For clinicians by clinicians* (2nd Ed.). Austin, TX: ProEd.
- Toner, M. A., & Shadden, B. B. (2010, in press). Communication and aging. Chapter 1 in M.A. Toner, B. B. Shadden, & M. Gluth (Eds.), *Communication and aging: For clinicians by clinicians* (2nd Ed.). Austin, TX: ProEd.

Service Activities of Co-Directors

- ALS Support Group – serve as facilitator for all monthly group meetings. Meets the information and support needs of persons with ALS and their families.
- ALS Association – Chair of Patient Care Services Committee for the local chapter of ALSA (2005).
    - Ongoing development of Loan Closet (now have 6 augmentative communication devices housed a the UA Speech Clinic).
    - Technology support services for persons with ALS – involves evaluating technology needs, including travel to the home for those who cannot physically be transported to our clinic.
- Stroke Support Group of NWA – founder and facilitator of stroke support group which meets monthly in Rogers, AR.

- Regional Representative, National Aphasia Association – respond to concerns of residents in Arkansas and surrounding states.
- Area Agency on Aging – consultation and coordination of shared projects.
- Member of three committees of national/international professional organizations.

Biotechnology Center

The Biotechnology (Biomass) Center is the home for the University of Arkansas Herbarium. Offices for museum personnel are located in the Center as is the curation laboratory.

The Center continues to house the food safety research efforts of Professor Michael Johnson of the Department of Food Science as well as the Agricultural Research Services Laboratories and Offices. It also houses Genesis clients on occasion.

University of Arkansas Press

After steady annual sales growth for a decade, mostly counter to industry performance, UA Press sales for FY'10 dipped from the previous year. In line with industry sales trends, which are reported to be in general decline, most of the slip in sales seems to be attributable to the sluggishness in the general economy. Book store sales are essentially evaporating before our eyes. (As are independent retail bookstores themselves; they disappear every day.) This general weakness in the market place can also be seen in the increase of returns over FY'09--*i.e.* unsold books that are returned for credit to our warehouse from bookstores and wholesalers. Again, some of this softness is a function of the general economy and another part is the steady--not to say robust--encroachment of on-line sales (especially from Amazon). Of course, some of the Amazon success comes our way through sales passed on (*i.e.* Amazon is, essentially, an on-line book store) but at a bigger discount and smaller by-title revenues. In the end, perhaps Amazon and other on-line sales will replace bookstore sales all together and sales of our general interest books will catch up. In the meantime, the current vitality and the future of general, retail bookstores looks grim. We are in the midst of studying methods and mechanisms of supplementing, then, perhaps, replacing retail book store sales with on-line sales to such as Amazon and direct-to-consumer sales.

As we study increased selling through the internet we are investigating the production of "e-books" as well. We are, in fact, moving ahead with our plans to produce "e-books". We have made an agreement with *Google Search* for our entire new and back list and we have made another agreement with *Google Editions* where we will select a certain number (perhaps *all*) of our titles to be available for sale in electronic editions. (It is relevant to mention that on July 20, 2010 Amazon reported that after only 33 months of operation , their electronic editions have overtaken sales of regular, clothbound editions. For every 100 clothbound books they sell, Amazon now sells 143 "e-books".) Stay tuned.

Sales of our client presses were also down in FY'10. Thus our commissions from these clients were a bit under last year's. ***It must be noted that this decline is not due to slow sales from***

client presses in FY'10 but to extraordinary sales in FY'09. This element of our business remains very lucrative and is a crucial part of our business . However, revenues from other non (UAP) book sources--poetry submissions, Philosophical Topics (journal)--were up. In addition, we have expanded our services offered to client presses and have taken on some of their editorial and production functions for a fee--thus exploiting the economy of scale advantage in this area.

Expenses for FY'10 were in slight decline over the previous year. This is especially true in discretionary expenses. We are confident we will maintain control of expenses but don't see much ability to cut further. It's not a matter of extravagance but of coverage. We are providing a minimum of marketing support for our list. More titles, more sales, will bring this into balance.

Our books continue to win awards and get excellent reviews in print media. College adoption sales remain strong and are clearly a target of our acquisition and marketing efforts. While we continue to develop our ability to compete for titles of interest outside the state and the region we plan to increase our efforts to build our regional list--both scholarly and general interest books.

Programmatically, the University of Arkansas Press has made major strides in recent years. Our books and our catalogs are widely admired and recognized and we are regularly held up as an example of having faced serious adversity and yet published our way into recognition as a university press of real value.

We are not yet as financially healthy as we want or need to be. We need to bring in more books and increase our sales and we need to revisit our financial underpinnings, our budget, and realign it with the reality of requirements to publish successfully in our cohort of university presses.

We have the staff, we have the know-how and we have the momentum. We need to reassess our support needs and proceed purposefully.

Arkansas Cyberinfrastructure

Summary

Arkansas Cyberinfrastructure includes the Arkansas High Performance Computing Center (AHPCC), the Arkansas Research and Education Optical Network, the Arkansas TeleHealth Project operated by UAMS.

The EPSCoR Track-2 CI-TRAIN collaborative grant to Arkansas and West Virginia is a significant source of funding for Arkansas cyberinfrastructure. CI-TRAIN is directed and managed through the AHPCC, and funds activities and resources at multiple partner centers and institutions. CI-TRAIN provides consultation and coordination across a wide range of research, training, and outreach activities and resources for computational and data driven science. This report focuses on activities and findings of the CI TRAIN grant and the Arkansas High Performance Computing Center.

1.0 Funding

1.1 Operations, instrumentation, outreach, workforce training

The following funding sources support operations, staff, instruments, and workforce training activities during the reporting period, with approximate dollars in force:

NSF #0918970, PI Apon, 09/01/09-08/30/12, $3,370,951 (CI-TRAIN, Arkansas portion)
NSF #0918949, PI Hill, 09/01/09-08/30/12, $2,629,049 (CI-TRAIN, West Virginia portion)
NSF MRI #0722625, PI Apon, 09/01/07-08/31/11, $815,286 (Star of Arkansas and REU supplement)
NSF MRI #0959124, PI Apon, 05/15/10-05/14/13, $900,000 (not yet encumbered)
Arkansas Science and Technology Authority (ASTA), Arkansas Cyberinfrastructure, PI Apon, 01/15/10-01/14/11, $668,008 (complements CI-TRAIN for Year 1)
Office of the Vice Provost for Research, match to ASTA, MRI, $200,000
University Information Technology Services, match to MRI, $20,000

1.1 Research and research training

The following funding sources additionally support research activities that utilize high performance computing resources, including cluster resources, staff assistance, travel or other types of support, with approximate dollars in force:

PI Apon

NSF #0946726, PI Apon, 09/15/09-02/28/11, $299,351 (Impact of High Performance Computing to Research Competitiveness of U.S. Academic Institutions, with Ahalt/RENCI)
NSF #0947679, PI Apon, 10/01/09-05/15/11, $99,736 (Exploring Parallelization of Nearest Neighbor Search and Clustering in High-Dimensional Space on Emerging Parallel Architectures with Applications in Computer Visions, with Cothren)
SILO/SURF, PI Apon, 01/01/10-05/15/11, $2,400 (Parallelization of Scale Invariant Feature Transform (SIFT) using MPI, support for honor's undergraduate student Stan Bobovych)

PI Bellaiche

NSF #0404335 PI Bellaiche, 05/15/04–05/14/10, $240,000 (Modeling and Designing Ferroelectrics with Defects and in Two-Dimensional Forms)
Department of Energy, PI Bellaiche, 12/01/04-11/30/09, $493,727 (Properties of ferroelectric nanostructures: a combined theoretical and experimental approach)
Office of Naval Research, PI Bellaiche, 06/01/05-05/31/10, $538,629 (Understanding and Designing Complex Ferroelectrics from First Principles)
NSF MRSEC, Co-PI Bellaiche, 10/01/05-09/30/10, $7.8 million (Center for Semiconductor Physics in Nanostructures (Oklahoma University – University of Arkansas))
NSF #701558, PI Bellaiche, 09/01/07-08/31/10, $285,000 (Complex phenomena in ferroelectrics and multiferroics from first principles)
DURIP, Office of Naval Research, Co-PI Bellaiche 06/01/07-05/31/10, $598,994 (Computer clusters for ab-initio simulations of piezoelectric materials)
Office of Naval Research (DEPSCOR), PI Bellaiche 06/01/08-05/31/11, $652,071 (First-Principles Investigation of Complex Phenomena in Ferroelectrics)
Army Research Office, Senior Personnel Bellaiche, 07/01/08-06/30/13, $4.5 million (Novel

Nanomaterials for Nanoscale Bio-sensors as a Defense against Biological Threats to America)
Department of Energy, PI Bellaiche, 10/01/09-09/30/12, $450,000 (Properties of multiferroic nanostructures from first principles)

PI El-Shenawee
Entergy, Inc., PI El-Shenawee, 07/01/08-05/31/10, $55,000, (Use of the Ground Penetrating Radar (GPR) and Advanced Imaging Algorithms to Detect Cracks in Buried Pipes)
DoD/ARL, Co-PI, El0Shenawee, 07/01/10-06/30/12, $1,600,000, (Terahertz Sensing and Imaging Technology)
NSF ECCS#1006927, Co-PI El-Shenawee, 07/01/10-05/31-12, $359,999 (Modeling and Fabricating Nanotoroid Antenna Pairs to Plasmon-Enhance Solar Phtovoltaic)

PI Pulay
NSF CHE #0911541, PI Pulay, $600,000 (approximate)

PI Spearot
NSF #0954505 PI Spearot, 4/1/10-3/31/15, $400,997 (CAREER: Computational modeling of microstructure evolution during vapor deposition)
NSF #0800718, Co-PI Spearot, 4/15/08-4/14/11, $259,269 (Understanding corrosion and diffusion behavior in metal particle polymer composites for corrosion sensing)
NSF S-STEM #0728636, PI Vickers, 9/15/07-8/31/12, $599,799 (One graduate student supported)
NSF REU, PI Spearot (One REU student supported)

1.3 Summary of Funding

The total value of federal and state funding during the last three years that supports operations, instrumentation, education, outreach, and training for high performance computing is more than $8.5M. The total value of externally funded projects that use HPC resources is more than $15M. The funding level by the state is about $920K and the total value of University of Arkansas funds that support HPC is about $600K for the comparable three year period. The calculated Return on Investment to the state and to the University is more than 20:1.

2.0 Staff

Operational staff funding is provided through the EPSCoR Track-2 CI-TRAIN project, through a grant from the Arkansas Science and Technology Authority (ASTA) and through a research match from the University of Arkansas. Support for computational science includes assistance on local and Teragrid resources for running jobs, moving data, setting up accounts, system administration for the AHPCC clusters, new acquisitions, training, and a modest amount of programming assistance. Partners at the Center for Advanced Spatial Technology (CAST) manage visualization resources and training that are funded by CI-TRAIN.
Campus Cyberinfrastructure (CI) Champions are funded by CI-TRAIN and work closely together to provide outreach and user support to users in West Virginia, Arkansas, and Oklahoma. Faculty CI Champions are tenured or tenure-track faculty that first enable their own research and then become a source of expert knowledge on their campus. IT CI Champions are professional IT staff that provide user support and enablement to campus users. Each campus

that has users of shared cluster and visualization resources identifies at least one Campus Champion to be the first line of support for that campus. Campus Champions and other significant CI-TRAIN partners are listed here. These personnel have participated regularly in CI-TRAIN meetings and activities. Many have delivered training or other support as components of the project:

2.1 AHPCC staff and associates

Dr. Amy Apon, Director, Arkansas High Performance Computing Center, CI-TRAIN Project PI, supported by CI-TRAIN (one summer month), ASTA, other research grants and match.

Dr. David Chaffin, Associate Director for Operations and User Support, Arkansas High Performance Computing Center, supported by ASTA, research match and CI-TRAIN funds

Jeff Pummill, Senior Linux Cluster Administrator (through December, 2009), and CI-TRAIN Project Manager (since January, 2010), supported by research match and CI-TRAIN funds. Jeff Pummill serves as Teragrid Champion as well as CI-TRAIN Project Manager and Lead CI-TRAIN IT CI Champion.

Kelley Emeneker, CI-TRAIN Communications Specialist, .5 FTE since February, 2010

Wesley Emeneker, HPC Graduate Assistant, .25 FTE research match, and .25 FTE through other NSF research support.

Dr. Douglas Spearot, Associate Professor, Mechanical Engineering, University of Arkansas, Lead CI-TRAIN Faculty CI Champion (one summer month)

2.2 CAST staff supported by CI-TRAIN and/or who are significant contributors to CI-TRAIN

Dr. Jackson Cothren, Director, Center for Advanced Spatial Technology, University of Arkansas

Dr. Fred Limp, Professor, University of Arkansas, co-PI CI-TRAIN

Adam Barnes, CAST, University of Arkansas

Bill Johnston, CAST, University of Arkansas

Angie Payne, CAST, University of Arkansas

Tim Sexton, CAST, University of Arkansas

Malcolm Williamson, CAST, University of Arkansas

Snow Winter, CAST, University of Arkansas

2.3 CI Champions at Institutions in Arkansas

Dr. Hai Jiang, Associate Professor, Computer Science, Arkansas State University, Faculty CI Champion

Justin Walker, Arkansas State University, Arkansas State University, IT CI Champion

Dr. Janet Renwick, Associate Professor, Information Technology, University of Arkansas at Fort Smith, Faculty CI Champion

Dr. Kenji Yoshigoe, Assistant Professor, Computer Science, University of Arkansas at Little Rock, Faculty CI Champion

Albert Everett, Computational Specialist, Graduate Institute of Technology, University of Arkansas at Little Rock, IT CI Champion

Dr. Umit Topaloglu, Adjunct Faculty, University of Arkansas for Medical Sciences, IT CI Champion

Dr, Jessie Walker, Assistant Professor, Computer Science, University of Arkansas at Pine Bluff, Faculty CI Champion
Dr. Clarence Burg, Visiting Assistant Professor, Mathematics, University of Central Arkansas, Faculty CI Champion

2.4 CI Champions at Institutions in West Virginia

Dr. Venkat Gudivada, Professor, Computer Science Marshall University, Faculty CI Champion
Dr. Jan Fox, Senior VP for Information Technology, Marshall University, IT CI Champion
Dr. Max Domaschco, Professor, Physics, West Virginia State University, Faculty CI Champion
Dr. Robert Huston, Director, Computer Services, West Virginia State University, IT CI Champion
Dr. Don McLaughlin, Research Associate, Computer Science & Electrical Engineering, West Virginia University, Faculty CI Champion

2.5 CI Champion at Institution in Oklahoma

Dr. Dana Brunson, Director, HPC, Oklahoma State University, Campus CI Champion

2.6 Summary of Staff

The collaborative CI TRAIN Project and the complementary funds provided by the Arkansas Science and Technology Authority for Cyberinfrastructure in Arkansas directly support at least 19 personnel in Arkansas and more than 23 personnel in institutions in Arkansas, West Virginia, and Oklahoma. Several additional personnel are supported by their institutions to contribute to the CI TRAIN project. The list of people who have participated in CI TRAIN activities is provided in the NSF report pages that are appended to this report. More than 250 people have been impacted by the CI TRAIN project in the past year.

3.0 Resources

3.1 Cluster Resources

Large-scale high performance clusters are a resource for computational science research and education to members from institutions in Arkansas as well as CI-TRAIN project partners. Cluster resources supported by AHPCC include the Red Diamond cluster and the Star of Arkansas cluster. Red Diamond was acquired through NSF MRI grant #0421099 in January 2005. The high-speed InfiniBand network and Lustre file system of Red Diamond were decommissioned in June 2008, but Red Diamond nodes continue to be used for special graduate student projects and for long-running serial jobs. The Star of Arkansas was acquired through MRI grant #0722626 and became available for production use in May 2008. It is composed of 157 dual quad-core compute nodes, or 1256 compute cores. The cluster resources are highly utilized, with queue times often exceeding one day.

Figure 1 illustrates the minimum, average, and maximum queue time per day for each week since June 2009. The figure shows that for more than half of the weeks during the reporting period that the maximum queue time in a day of 24 hours was reached by at least one job. The

average queue time is often more than 12 hours. The queue times are smaller during the last half of the year after several students graduated. It is expected that these will grow again as new students begin to use the resources this fall, until new HPC resources become available.

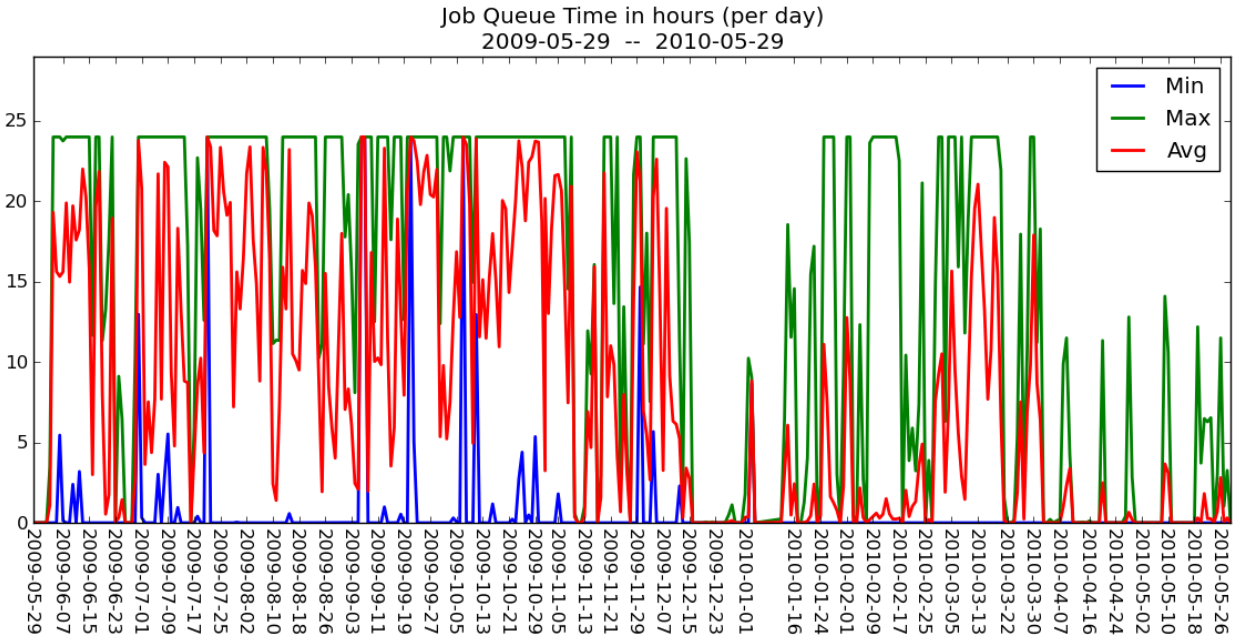


Figure 1. Job Queue Time in Hours per Day for Each Week

Figure 2 illustrates the number of waiting and active cores for the cluster resources for each week. The number of jobs waiting for cores is almost never zero, indicating that the system is highly utilized.

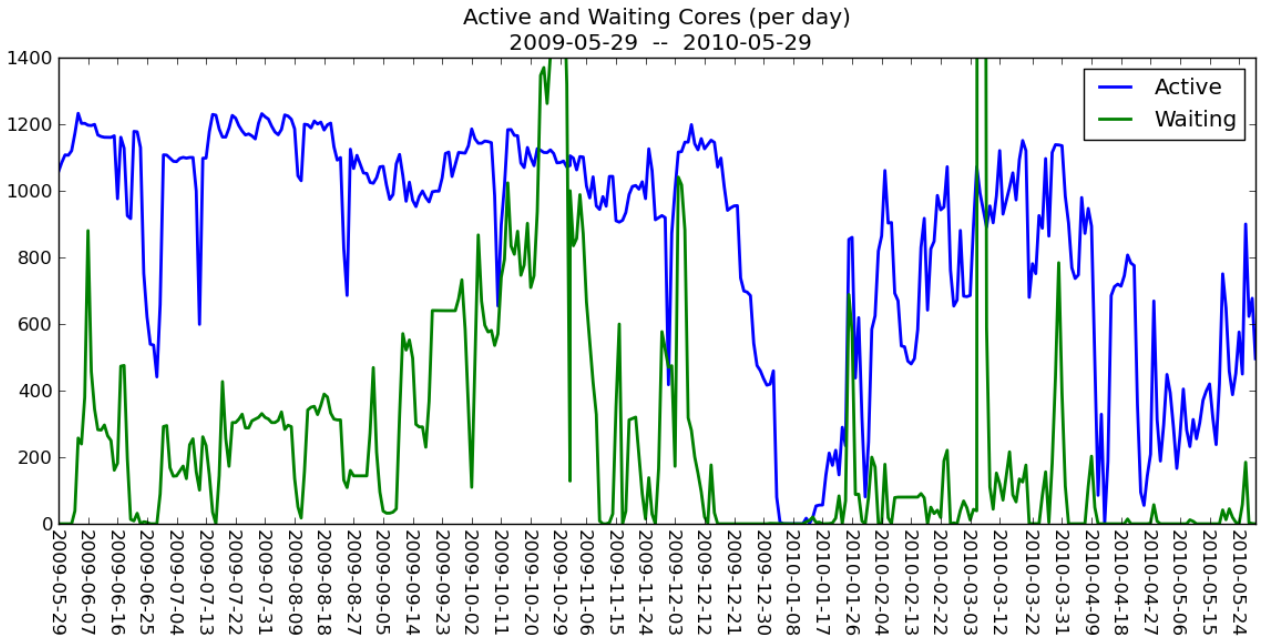


Figure 2. Number of Waiting and Active Cores for Each Week

Other cluster resources include:

- At AHPCC a GPU cluster was acquired through CI-TRAIN funds in December 2009. This cluster consists of six nodes, each with dual quad-core Intel Nehalem processors, dual Nvidia 295 GPU cards, InfiniBand. An additional node with an Nvidia Fermi card has also been purchased. The cluster is accessible by logging in to the Star of Arkansas and submitting to the gpu queue.
- The University of Arkansas at Little Rock has an existing 64-node cluster. The cluster consists of dual quad-core nodes and was acquired through an NSF MRI grant in 2008. Administration and user support is funded in part through CI-TRAIN.
- At Arkansas State University, several colleges have indicated they are interested in partnering to acquire a large HPC cluster. The process has slowed due to the summer lag across campus. The plan is to get a bigger money pool for equipment soon. Quotes on GPU clusters with CI-TRAIN funds and stand-alone desktops have been acquired.
- At Marshall University an HPC cluster from Dell has been purchased through CI-TRAIN. Delivery and setup are in progress.

3.2 Visualization and Data Capture Resources

Visualization and digital data capture devices are managed through the Center for Advanced Spatial Technologies. Equipment is available for checkout to CI-TRAIN project participants by contacting Dr. Jackson Cothren. New data capture equipment that has been acquired for CI-TRAIN includes:

1. Leica Viva GNSS RTK/Rapid-Static Survey System
   - 2 Viva GNSS Rovers

- 1 Viva GNSS Base Station
- 2 Data loggers
- Accessories (tripods, batteries, etc)
- Leica Geomatics Software to process baselines, solve loop closures and perform least squares adjustments.

2. Leica ScanStation C10
   The Leica ScanStation C10 scanner is a time-of-flight scanner with an effective operating range of 1-200 m (up to 300 m with 90% reflectivity). Detailed information on the C10 is provided on the Leica web site (http://hds.leica-geosystems.com/en/Leica-ScanStation-C10_79411.htm).
3. Z+F 5600I
   The Z+F 5006i scanner is a phase-based system designed for an effective working range of 1m to approximately 50 m - though somewhat longer distances are possible out to its design limit of 79 m. The 5 mega-pixel Schneider Kreuznach M-Cam camera system can be attached to the Z+F scanner to automatically acquire color images that are photogrammetricly mapped onto the point cloud. http://www.zf-laser.com/e_imager5006.html.
4. Breuckmann SmartScan HE
   Taken from: http://www.breuckmann.com/en/engineering-industry/products/smartscan-3d-he.html
   The smartSCAN 3D-HE is a structured light, stereo camera 3D metrology device characterized by an extremely fast data acquisition at a very high level of resolution. The smartSCAN 3D-HE delivers highly accurate 3D coordinates within seconds for any kinds of objects, regardless of their size, geometry and complexity. The practical qualification and effectiveness of the system is proven in its daily application context, be it in the traditional measurement laboratory, the workshop setting or in a rough and demanding industrial production environment.

3.3 Other Resources

Resource acquisition and enhancement at Marshall University includes network and infrastructure enhancements to Internet 2 and software acquisitions (including licenses for COMSOL Multiphysics, Scientific Visualization, and AVIZO), and non-commercial software installation of Lammps, NAMD, ABINIT & BIGDFT, PETA Chem (Beta Trail Version), Scientific Visualization, PYMOL, ParaView, and VMD.
Resource acquisition and enhancement at the University of Arkansas at Little Rock includes a Virtual Reality Center Equipment upgrade (Cave License upgrade)

4.0 Research Products

The CI-TRAIN project, managed through the Arkansas HPC Center, supported the production of at least 49 journal articles, 19 articles in conference proceedings, and 88 additional conference and workshop presentations during the reporting period. Publications that also used cluster resources funded through MRI #0722625 are noted.

4.1 Books and Book Chapters

Publications supported by CI-TRAIN

1. C. STEWART, G. ALMES, B. WHEELER (EDITORS), G. ALMES, A. APON, G. BROWN, H. HONG, D. LIFKA, A. LUMSDAINE, C. LYNCH, M. PIERCE, B. PLALE, R. PORDES, J. SCHOPF, C. STEWART, V. WELCH, BR. WHEELER, "Cyberinfrastructure Software Sustainability and Reusability", Preliminary report from an NSF-funded workshop held 27 & 28 March 2009, May, 2010. https://www.slashtmp.iu.edu/public/download.php?FILE=mlingwal/18308O3LpJl

Publications supported by CI-TRAIN and MRI #0722625

2. The HPC Instructor's Manual, with co-author Daniel Apon and Linh Ngo, October, 2009.

4.2 Journal Publications

Publications supported by CI-TRAIN

3. COTHREN, J., AND B. SCHAFFRIN. (In Press) Comparison of Error Propagation in Block Orientation. ISPRS – International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences. ISPRS Commission VII Symposium "Advancing Remote Sensing Science".
4. EMENEKER, W. AND A. APON. (In Press) "Characterizing the Performance of Cache-Aware Placement of Virtual Machines on a Multi-Core Architecture," International Journal of Ad Hoc and Ubiquitous Computing (IJAHUC), Special Issue on Cloud Computing – Technologies and Services, 2010.
5. GRIFFIN, W.O., J. HANNNA, J.A. DARSEY, S. RAZORILOVA, M. KITAEV, A. ALISHERO, O. TARASENKO. (2010) "An artificial neural network investigation of genetic and physiological data in tuberculosis patients", submitted to *MCBIOS 2010*, Jonesboro, AR, February 2010.
6. GRIFFIN, W.O. AND J.A. DARSEY. (2010) "Bulk Metallic System Modeling of Metal Hydride Dimer and Trimer Nanoclusters", *Journal of Computational and Theoretical Nanoscience*, Vol. 7, 1-6.
7. IM, I.G. (2010) "Predicting Protein Secondary Structure Using Markov Chain Monte-Carlo Simulation", Master Thesis, Department of Computer Science, University of Arkansas at Little Rock. (Supervised by Peiyi Tang and Jerry A. Darsey).
8. LIMP, W. (2010) Towards a strategy for evaluating heritage visualizations. Frischer, B (ed) Proceedings, Making History Interactive, 37th Annual Conference on Computer Applications and Analytical Methods in Archaeology. http://www.caa2009.org/articles/Limp_Contribution233_c%20(1).pdf.
9. PAYNE, A, K. COLE, K. SIMON, C. GOODMASTER AND W. F. LIMP. (2010) "Designing the next generation virtual museum." Frischer, B (ed) Proceedings, CAA 2009, Making History Interactive. Williamsburg VA.
10. SIMON, K., A. PAYNE, K. COLE, S. SMALLWOOD, C. GOODMASTER, F. LIMP AND J. COTHREN. (2010) Close-Range 3D Laser Scanning and Virtual Museums:

Beyond Wonder Chambers and Cabinets of Curiosity? Frischeer, B. (ed) Proceedings, Making History Interactive, 37th Annual Conference on Computer Applications and Analytical Methods in Archaeology. http://www.caa2009.org/articles/Simon_Contribution368_a (1).pdf

11. SMALLWOOD, S., A. PAYNE, K. SIMON, C. GOODMASTER, W. LIMP AND J. COTHREN. (2010) Lighting Systems in Three Dimensional Non-Contact Digitizing: A View from the Virtual Hampson Museum Project. Frischer (ed) Proceedings, Making History Interactive, 37th Annual Conference on Computer Applications and Analytical Methods in Archaeology. http://www.caa2009.org/articles/Smallwood_Contribution292_c%20(1).pdf
12. TANG, P., I.G. IM AND J.A. DARSEY. (2010) "Predicting Protein Secondary Structures using Monte-Carlo Simulation and SOV-Distance Based Clustering", submitted.
13. TULLIS, J.A., J.R. JENSEN, G.T. RABER AND A.M. FILIPPI. (2010) Spatial Scale Management Experiments Using Optical Aerial Imagery and LIDAR Data Synergy, GIScience and Remote Sensing, in press.
14. GRIFFIN, W.O., J. HANNNA, J.A. DARSEY, S. RAZORILOVA, M. KITAEV, A. ALISHERO, O. TARASENKO. (2009) "An Artificial Neural Network Evaluation of Tuberculosis Using Genetic and Physiological Data", submitted to *Bionanotox 2009*, Little Rock, AR.

Publications supported by CI-TRAIN and MRI #0722625

15. DUPE, B., INFANTE, I. C., GENESTE, G., JANOLIN, P., BIBES, M., BARTHELEMY, A., LISENKOV, S., BELLAICHE, L., RAVY, S. & DKHIL, B. (In Press): *Competing phases in BiFeO3 thin films under compressive epitaxial strain*. *Physical Review B*.
16. INFANTE, I. C., LISENKOV, S., DUPE, B., BIBES, M., FUSIL, S., JACQUET, E., GENESTE, G., PETIT, S., COURTIAL, A., JURASZEK, J., BELLAICHE, L., BARTHELEMY, A. & DKHIL, B. (Submitted): *Bridging multiferroic phase transitions by epitaxial strain in BiFeO3*. *Physical Review Letters*.
17. HAJIHASHEMI, M. & EL-SHENAWEE, M. (Under Review): Inverse Scattering of Three-dimensional Perfectly Conducting Objects. Journal of Computational Physics.
18. HASSAN, A. & EL-SHENAWEE, M. (Under Preparation): Parallel Implementation of the Diffusion-Drift Algorithm for Modeling the Electric Signals Generated by Breast Tumors. Journal of Computational Physics.
19. KIAT, J. M., BOGICEVIC, C., KAROLAK, F., DEZANNEAU, G., GUIBLIN, N., REN, W., BELLAICHE, L. & HAUMONT, R. (In Press): *Low-symmetry phases and loss of relaxation in nanosized lead scandium niobate PSN*. *Physical Review B.*
20. REN, W. & BELLAICHE, L. (Submitted): Striking depolarizing and size effects in multiferroic BiFeo3 nanodots. Nano Letters.
21. PROSANDEEV, S., LISENKOV, S. & BELLAICHE, L. (Submitted): Kittel law in BiFeO3 ultrathin *films: a first-principles-base*d *study. Physical Review* Letters.

22. SICHUGA, D., REN, W., PROSANDEEV, S. & BELLAICHE, L. (In Press): Chiral patterns of tilting of oxygen octahedra in zero-dimensional ferroelectrics and multiferroics: A first principle-based study. Physical Review Letters.

23. SUDIBJO, A. & SPEAROT, D.E. (Submitted): Molecular dynamics simulation of diffusion of atmospheric penetrate in polydimethylsiloxane. ASME Early Career Technical Journal.

24. TERDALKAR, S. S., HUANG, S., YUAN, H., RENCIS, J. J., ZHU, T. & ZHANG, S.L. (Submitted): Nanoscale Fracture in Graphene. Physical Review Letters.

25. ALBRECHT, D., LISENKOV, S., REN, W., RAHMEDOV, D., KORNEV, I. A. & BELLAICHE, L. (2010): *Ferromagnetism in multiferroic BiFeO3 films: a first-principles-based study*. *Physical Review B, 81*, 140401 (R).

*26. ALMAHMOUD, E., KORNEV, I. & BELLAICHE, L. (2010): Dependenc*e of Curie temperature on the thickness of an ultrathin ferroelectric film. Physical Review B, 81.

27. BIN-OMRAN, S., KORNEV, I., PONOMAREVA, I. & BELLAICHE, L. (2010): Diffuse phase transitions in ferroelectric ultrathin films from *first principles. Physical Review B, 81*.

28. LOUIS, L., GEMEINER, P., PONOMAREVA, I., BELLAICHE, L., GENESTE, G., MA, W., SETTER, N. & DKHIL, B. (2010): *Low-symmetry phases in ferroeletric nanowires*. *Nano Letters*, doi:10.1021/nl9034708.

29. RAJGARHIA, R.K., SPEAROT, D.E., SAXENA, A. (2010) Behavior of dopant modified interfaces in metallic nanocrystalline materials, JOM, to appear in December issue.

30. RAJGARHIA, R.K., SPEAROT, D.E., SAXENA, A. (2010) Plastic deformation of nanocrystalline copper-antimony alloys, Journal of Materials Research, 25, 411-421.

31. RAJGARHIA, R.K., SPEAROT, D.E., SAXENA, A. (2010) Molecular dynamics simulations of dislocation activity in single crystal and nanocrystalline copper doped with antimony, Metallurgical Transactions A, 41, 854-860.

32. RAJGARHIA, R. K., SAXENA, A., SPEAROT, D. E., HARTWIG, K. T., MORE, K. L., KENIK, E. A. & MEYER, H. (2010): Microstructural stability of copper with antimony dopants at grain boundaries: Experiments and molecular dynamics simulations. Journal of Materials Science.

33. SUDIBJO, A., SPEAROT, D.E. (2010) Molecular dynamics simulation of diffusion of atmospheric penetrate in polydimethylsiloxane, *Molecular Simulation*, under review.

34. BEA, H., DUPE, B., FUSIL, S., MATTANA, R., JACQUET, E., WAROT-FONROSE, B., WILHELM, F., ROGALEV, A., PETIT, S., CROS, V., ANANA, A., PETROFF, F., BOUZEHOUANE, K., GENESTE, G., DKHIL, B., LISENKOV, S., PONOMAREVA, I., BELLAICHE, L., BIBES, M. & BARTHELEMY, A. (2009): *Evidence for Room-Temperature Multiferroicity in a Compound with a Giant Axial Ratio*. *Physical Review Letters, 102*, 217603.

35. DKHIL, B., GEMEINER, P., AL-BARAKATY, A., BELLAICHE, L., DULKIN, E., MOJAEV, E. & ROTH, M. (2009): *Intermediate temperature scale T* in lead-based*

relaxor systems. *Physical Review B, 80*, 064103.

36. KORNEV, I. & BELLAICHE, L. (2009): Nature of the ferroelectric phase transition in multiferroic BiFeO3 from first principles. Physical Review B, Rapid Communications, 79, 100105.
37. LISENKOV, S., RAHMEDOV, D. & BELLAICHE, L. (2009): Electric-field-induced paths in multiferroic BiFeO3 from atomistic simulations. Physical Review Letters, 103, 047204.
38. OSTAPCHUK, T., PETZELT, J., HLINKA, J., BOVTUN, V., KUZEL, P., PONOMAREVA, I., LISENKOV, S., BELLAICHE, L., TKAC, A. & VILARINHO, P. (2009): *Broad-band dielectric spectroscopy and ferroelectric soft-mode response in the Ba0.6SR0.4TiO3 solid solution*. *Journal of Physics Condensed Matter, 21*, 474215.
39. PITONAK, M., JANOWSKI, T., NEOGRADY, P. & ET AL (2009): Convergence of the CCSD(T) Correction Term for the Stacked Complex Methyl Adenine-Methyl Thymine: Comparison with Lower-Cost Alternatives. JOURNAL OF CHEMICAL THEORY AND COMPUTATION, 5, 1761-1766.
40. PROSANDEEV, S., AKBARZADEH, A. R. & BELLAICHE, L. (2009): Discovery of incipient ferrotoroidics from atomistic simulations. Physical Review Letters, 102, 257601.
41. PROSANDEEV, S. & BELLAICHE, L. (2009): Hypertoroidal moment in complex dipolar structures. Journal of Materials Science, 44, 5235.
42. RAJGARHIA, R. K., SPEAROT, D. E. & SAXENA, A. (2009): Heterogeneous dislocation nucleation in single crystal copper-antimony solid-solution alloys.. Modeling & Simulation in Materials Science & Engineering, 17, 055001.
43. SICHUGA, D., PONOMAREVA, I. & BELLAICHE, L. (2009): Phase diagrams of epitaxial Pb(Zr,Ti)O3 ultrathin Films from first principles. Physical Review B, 80, 134116.
44. TERDALKAR, S. S., ZHANG, S., RENCIS, J. J. & HSIA, K.J. (2009): Molecular Dynamics Simulations of Ion-Irradiation Induced Deflections of 2D Graphene Films. International Journal of Solids and Structures, 45, 2908-2917.

4.3 Conference Proceedings

Publications supported by CI-TRAIN

1. WANG, Z., C. MEI AND H. JIANG. (2010) “DataXchg: A Portable Data Exchange Toolkit for Heterogeneous Computing”, To appear in Proceedings of the 9th IEEE/ACIS International Conference on Computer and Information Science (ICIS), Kaminoyama, Japan, August 18-20, 2010.
2. MEI, C., R. LI, H. ZHOU, AND H. JIANG. (2010) “Exploiting Bit and GPU-Thread Level Parallelism in Construction of Generalized Minimum Aberration Designs”, In Proceedings of the 2010 International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA), Las Vegas, USA, July 12-15, 2010.
3. SHEN, F. AND H. JIANG. (2010) “A Trustworthy Storage System with Variable Data

Partitioning", To appear in Proceedings of the 4th International Conference on Complex Distributed Systems (CODS), Chongqing, China, July 12-14, 2010.

4. COTHREN, J. AND B. SCHAFFRIN. (2010) "Comparison of Error Propagation in Block Orientation". Technical Commission VII Symposium 2010. Advancing Remote Sensing Science. July 5-8, 2010, Vienna, Austria.
5. SHEN, F., C. MEI, H. JIANG AND Z. XU. (2010) "Towards Secure and Reliable Data Storage with Multi- coefficient Secret Sharing", In Proceedings of the third IEEE International Symposium on Trust, Security and Privacy for Emerging Applications (TSP), Bradford, UK, June 29-July 01, 2010.
6. MEI, C., H. JIANG AND J. JENNESS. (2010) "Pitcher: Enabling Distributed Parallel Computing with Automatic Thread and Data Assignments ", In Proceedings of the 24th IEEE International Conference on Advanced Information Networking and Application (AINA), Perth, Australia, April 20-23, 2010.
7. MEI, C., H. JIANG AND J. JENNESS. (2010) "CUDA-based AES Parallelization with Fine-Tuned GPU Memory Utilization", In Proceedings of 11th IEEE International Workshop on Parallel and Distributed Scientific and Engineering Computing (PDSEC), held with the 24th IEEE International Parallel and Distributed Processing Symposium (IPDPS), Atlanta, USA, April 19-23, 2010.
8. HURST, W.B., S. RAMASWAMY, K.YOSHIGOE, R.B. LENIN, AND D. HOFFMAN. (2010) "Modeling and Simulation of HPC Systems Through Job Scheduling Analysis", Acxiom Laboratory for Applied Research Conference, ALAR 2010, University of Central Arkansas (UCA) campus, Conway, Arkansas, USA, April 2010.
9. THOTAKURA, S., AND J.A. DARSEY. (2010) "Modeling studies of Geldanamycin and similar compounds to treat Parkinson's Disease", In BMC Bioinformatics, Proceedings of the Seventh Annual Conference of the Mid South Computational Biology and Bioinformatics Society (MCBIOS) 2010 Jonesboro, Arkansas February 19-20, 2010.
10. HURST, W.B., S.RAMASWAMY, R.B.LENIN, AND D. HOFFMAN. (2010) "Development of Generalized HPC Simulator", ICDCIT 2010, 6th International Conference on Distributed Computing and Internet Technology, Bhubaneswar, India, February 2010.
11. COTHREN, J., D. FREDERICK, W.F. LIMP, T. DENOBLE, A. BARNES, C. GOODMASTER, AND C. STEVENS. (2010) "Visualizing the Roman City: Viewing the past through multidisciplinary eyes." Proceedings of the 36th (2008) Annual Conference on Computer Applications and Quantitative Methods in Archaeology. Budapest.
12. COTHREN, J. C. GOODMASTER, A. BARNES, E. ERNENWEIN, A. VRANICH, W.F. LIMP, AND A. PAYNE. (2010) "Fusion of 3-dimensional data at Tiwanaku: An approach to spatial data integration." Proceeding of the 36th (2008) Annual Conference on Computer Applications and Quantitative Methods in Archaeology, On the Road to Reconstructing the Past. Budapest.
13. COTHREN, J., D. FREDERICK, W.F. LIMP, T. DENOBLE, A. BARNES, C. GOODMASTER, AND C. STEVENS. (2010) "Visualizing the Roman City: Viewing the past through multidisciplinary eyes." Proceedings of the 36th (2008) Annual Conference

on Computer Applications and Quantitative Methods in Archaeology. Budapest.

14. COTHREN, J., C. GOODMASTER, A. BARNES, E. ERNENWEIN, A. VRANICH, W.F. LIMP, AND A. PAYNE. 2010. "Fusion of 3-dimensional data at Tiwanaku: An approach to spatial data integration." Proceeding of the 36th (2008) Annual Conference on Computer Applications and Quantitative Methods in Archaeology, On the Road to Reconstructing the Past. Budapest.

Publications supported by CI-TRAIN and MRI #0722625

15. WARN, S., W. EMENEKER, J. COTHREN, AND A. APON. (2009) Accelerating SIFT on Parallel Architectures. IEEE Cluster 2009 Proceedings. New Orleans, LA. Aug 31 - Sep 4.
16. GUDIVADA, V. "Performance Computing: Programming Paradigms, Tools, and Application Areas". International Conference on Informatics, Cybernetics and Computer Applications (ICICCA). Bangalore, India, July 19 - 21, 2010.
17. EMENEKER, W. AND A. APON, "Cache Effects of Virtual Machine Placement on Multicore Processors," International Workshop on Virtualization Technology (IWVT '10), Bradford, UK, June 2010.
18. BUI, H., W. EMENEKER, A. APON, D. HOFFMAN, AND L. DOWDY, "Fairshare Scheduling – A Case Study," Linux Cluster Institute (LCI) International Conference on High Performance Cluster Computing, Pittsburgh, PA, March 2010.

4.4 Additional Conference Presentations

Presentations supported by CI-TRAIN

1. SZWILSKI, T., J. SMITH AND J. CHAPMAN. (2010) "Virtual Interactive Environments: Applications". Miners' Celebration, Glade Springs, WV, June 17, 2010.
2. COTHREN, J., W.F. LIMP, J.A. TULLIS, S. WINTERS, M. WILLIAMSON, AND A. PAYNE. *2010) "High Performance Computing, Visualization and Large Geospatial Data Sets", Invited Presenation at CyberInfrastructure Days, Fayetteville, AR 17-MAY-10.
3. EGUCHI, A. & C. THOMPSON. (2010): *Smart Objects in a Virtual World*. Poster Presentation: Cyberinfrastructure Days, May 16-17, University of Arkansas, Fayetteville, AR.
4. KUMAR, T. & C. THOMPSON (2010): Beyond the *PIE: Enabling Human – Inanimate Communication in a Virtual World*. Poster Presentation: Cyberinfrastructure Days, May 16-17, University of Arkansas, Fayetteville, AR.
5. SCHMIDT, P., CRONAN, T.P., DOUGLAS, D. & ALNUAIMI, A. (2010): *SAP Simulation Training: Influence on SAP Knowledge and Attitudes Toward ERP*. Poster Presentation: Cyberinfrastructure Days, May 16-17, University of Arkansas, Fayetteville, AR.
6. STARLING, D. & THOMPSON, C. (2010): *Automated Path Finding Service for Second Life*. Poster Presentation: Cyberinfrastructure Days, May 16-17, University of Arkansas,

Fayetteville, AR.

7. PUMMILL, J., D. BRUNSON AND A. APON, “Community Funding Models for Computational Resources,” position paper, NSF-funded Workshop on Sustainable Research Computing Centers, Ithaca, NY, May 2010.
8. SZWILSKI, T., J. SMITH AND J. CHAPMAN. (2010) “Internet-based virtual environments to support mine safety training and simulations”. SWEMP Conference, Prague, Czech Republic, May 2010.
9. WILLIAMSON, M., J. COTHREN AND B. CULPEPPER [presenter] (2010). “ArcGIS based LIDAR processing tools, leveraged within Arkansas' Bayou Meto watershed”, Presentation at MAGIC 2010 Conference, Kansas City, MO 20-APR-10.
10. ERNENWEIN, E., M. HARGRAVE, J.J. LOCKHART, G. AVERY AND H.F. GREGORY. (2010) “New Findings at Presidio Los Adaes, Louisiana: Results of Large-Area Geophysical Survey and Targeted Excavations”, Presentation at Society for American Archaeology, St. Louis, MO 15-APR-10.
11. PAYNE, A., F. LIMP AND J. COTHREN. (2010) “The Evolution of Point Cloud Processing Software and its Affect in Culture Heritage Applications”. F. Melero, F., P. Cano and J. Tevelles (eds) Fusion of Cultures: 38th Annual Conference on Computer Applications and Analytical Methods in Archaeology: Abstracts. page 653. April 8, 2010. Granada Spain
12. LIMP, W., A. PAYNE, S. WINTERS, A. BARNES AND J. COTHREN. (2010) “Approaching 3D Digital Heritage Data from a Multi-technology, Lifecycle Perspective”. Melero, F., P. Cano and J. Tevelles (eds) Fusion of Cultures: 38th Annual Conference on Computer Applications and Analytical Methods in Archaeology: Abstracts. pages 519-522. Granada Spain.
13. VRANICH, A., J. COTHREN AND W. LIMP. (2010) “Recreating Cuzco in three dimensions”. Melero, F., P. Cano and J. Tevelles (eds) Fusion of Cultures: 38th Annual Conference on Computer Applications and Analytical Methods in Archaeology: Abstracts. pages 659. Granada Spain
14. VRANICH, A., K. FISHER, S. BOOTS, C. TROUNG, A. BARNES AND J. COTHREN. (2010) “Rendering Cuzco in Three Dimensions“, Presentation at Institute of Andean Studies Meetings, Berkeley, California 07-JAN-10.
15. PAYNE, A., K. COLE, K. SIMON, C. GOODMASTER AND W. F. LIMP. (2010) "Designing the next generation virtual museum". Frischer, B (ed) Proceedings, CAA 2009, Making History Interactive.Williamsburg VA.
16. VRANICH, A. AND A. BARNES. (2009) “Recreating Cuzco in Three Dimensions”, Presentation at: Surveying Andean Legacy: Archaeological Research along the Inka Road System, Washington, DC 08-DEC-09.
17. SZWILSKI, T., J. SMITH, J. CHAPMAN AND T. BUCKLAND. (2009) “Applying visualization to benefit safety training”. International Mine Planning Conference, Beijing, China, November 2009.
18. GORHAM, B. AND J. COTHREN. (2009) “Developing a process for the rapid collection

and processing of Aerial Imagery with TerraHawk: Lessons from Arkansas' 2008 flood event", Presentation at Arkansas GIS User Forum Symposium, Eureka Springs 29-OCT-09.

19. PAYNE, A., B. FEIHLER AND R.B. CULPEPPER. (2009) "Terrestrial LIDAR Workshop", Presentation at Arkansas GIS Users Conference, Eureka Springs, AR 28-OCT-09.
20. COTHREN, J.D., M.D. WILLIAMSON AND J.A. TULLIS. (2009) "Leveraging LIDAR for a Wetland Assessment Model in the Bayou Meto Watershed", Presentation at Arkansas GIS Users Forum Tenth Biennial Symposium and Training, Eureka Springs, AR 27-OCT-09.
21. PAYNE, A., S. WINTERS, AND W.F. LIMP. (2009) "Virtual Hampson Museum: Complete 3D Artifacts Available for Free Download and Viewing". Presentation at Arkansas GIS Users Forum Conference, Eureka Springs, AR 27-OCT-09.
22. CULPEPPER, R.B., W.F. LIMP, AND J. COTHREN. (2009) "RGIS Mid-South FY08 Annual Report Summary", Presentation at RGIS Fall Technical Meeting 2009, Webinar hosted by Penn State University 23-SEP-09.

Presentations supported by CI-TRAIN and MRI #0722625

23. BOBOVYCH, S., W. EMENEKER, S. WARN, A. APON, & J. COTHREN (Submitted) "Parallelization of the Scale Invariant Feature Transform using MPI," submitted to SC10.
24. DUPE, B., INFANTE, I. C., JANOLIN, P., FUSIL, S., LISENKOV, S., PONOMAREVA, I., RAVY, S., BELLAICHE, L., GENESTE, G., BEA, H., BOUZEHOUANE, K., WAROT-FONROSE, B., JACQUET, E., BIBES, M., BARTHELEMY, A. & DKHIL, B. (2010): *Phase competition in BiFeO3 thin films: A combined theoretical and experimental approach*. Presentation at the ISAF 2010 symposium, August 9-12, Edinburgh, Scotland.
25. WARN, S., W. EMENEKER, J. GAUCH, J. COTHREN, & A. APON (2010) "Accelerating Image Feature Comparisons using CUDA on Commodity Hardware," Symposium on Application Acceleration in High Performance Computing", Knoxville, TN, July 2010.
26. JANOLIN, P. E., KIAT, J. M., KORNEV, I., DKHIL, B., PERTSEV, N., BOUVIER, P., KREISEL, J., BELLAICHE, L. & UESU, Y. (2010): *How ferroelectrics handle stress and pressure*. Presentation at the 7th Asian Meeting of Ferroelectricity and 7th Asian Meeting on Electroceramincs, June 28- July 1, Jeju, Korea.
27. INFANTE, I. C., LISENKOV, S., DUPE, B., BIBES, M., FUSIL, S., JACQUET, E., GENESTE, G., PETIT, S., BELLAICHE, L., BARTHELEMY, A. & DKHIL, B. (2010): *Effet de la contrainte epitaxiale sur les transitions de phase du multiferroique BiFeO3*. Presentation at the ISIF 2010 meeting, June 13-26, San Juan, Puerto Rico.
28. DUPE, B., INFANTE, I. C., JANOLIN, P., LISENKOV, S., FUSIL, S., PONOMAREVA, I., RAVY, S., BELLAICHE, L., GENESTE, G., BEA, H., BOUZEHOUANE, K., WAROT-FONROSE, B., JACQUET, E., BIBES, M., BARTHELEMY, A. & DKHIL, B. (2010): *Unusual behaviours in the model multiferroic BiFeO3 under strain effects*. Presentation at the ISIF 2010 meeting, June 13-26, San

Juan, Puerto Rico.

29. INFANTE, I. C., DUPE, B., LISENKOV, S., PONOMAREVA, I., BELLAICHE, L., GENESTE, G., JANOLIN, P., RAVY, S., PETIT, S., BEA, H., WAROT-FONROSE, B., BOUZEHOUANE, K., FUSIL, S., JACQUET, E., BIBES, M., DKHIL, B. & BARTHELEMY, A. (2010): *Strain Tuning Multiferroic BiFeO3 Film Phases and Transitions*. Invited presentation at the ISIF 2010 symposium, June 13-16, San Juan, Puerto Rico.
30. KORNEV, I., BELLAICHE, L., LISENKOV, S., DKHIL, B. & HAUMONT, R. (2010): *Effective Hamiltonian Approach to Multiferroics*. Invited presentation at the "Theory of Magnetoelectrics: Fundamentals and Applications" workshop, May 26-28, Lausanne (Switzerland).
31. STEPKOVA, V., WEERASINGHE, J., BELLAICHE, L. & HLINKA, J. (2010): *Landau-Devonshire expansion for SrTiO3 through effective Hamiltonian technique*. Presentation at the XIX Czech-Polish seminar: Structural and ferroelectric phase ptransistion, May 24-28, Telc, Czech Republic.
32. ABDULLAHI, U., AL-SHUKRI, S., AYDEN, K., WALKER, J., MORTAZAVI, M., & SINGH, S. (2010): *Quantam Mechanical Calculations for Photon Number Distribution for a Laser with Cavity Nonlinear Saturable Absorber*. Poster Presentation: Cyberinfrastructure Days, May 16-17, University of Arkansas, Fayetteville, AR.
33. BOBOVYCH, S., EMENEKER, W. & APON, A. (2010): *Parallelizing SIFT on a Distributed Memory Cluster Using Data Decomposition*. Poster Presentation: Cyberinfrastructure Days, May 16-17, University of Arkansas, Fayetteville, AR.
34. DOWNS, R., TERDALKAR, S. & RENCIS, J.J. (2010): *Molecular Dynamics Simulation to Determine Temperature Dependent Young's Modulus of Graphene*. Poster Presentation: Cyberinfrastructure Days, May 16-17, University of Arkansas, Fayetteville, AR.
35. EMENEKER, W. & APON, A. (2010): *Cache Effects of Virtual Machine Placement on Multi-Core Processors*. Poster Presentation: Cyberinfrastructure Days, May 16-17, University of Arkansas, Fayetteville, AR.
36. HAJIHASHEMI, M.R. & EL-SHENAWEE, M. (2010): *MPI Implementation of the Level Set Algorithm for Microwave Imaging Applications*. Poster Presentation: Cyberinfrastructure Days, May 16-17, University of Arkansas, Fayetteville, AR.
37. HASSAN, A.M. & EL-SHENAWEE, M. (2010): *Modeling Electrical Activities of a Growing Breast Cancerous Cell Based on a Semiconductor Approach*. Poster Presentation: Cyberinfrastructure Days, May 16-17, University of Arkansas, Fayetteville, AR.
38. MEI, C. & JIANG, H. (2010): *Exploiting Bit and GPU-Thread Level Parallelism in Construction of Generalized Minimum Aberration Designs*. Poster Presentation: Cyberinfrastructure Days, May 16-17, University of Arkansas, Fayetteville, AR.
39. PAI, N., SARASWAT, D. & SARKAR, S. (2010): *Utilizing Cyberinfrastructure for Watershed Modeling*. Poster Presentation: Cyberinfrastructure Days, May 16-17, University of Arkansas, Fayetteville, AR.

40. SLEEZER, R., KRASINSKI, J.S. & SALAMO, G. (2010): *Nonlinear Transmission Lines for Ultrafast Electronics*. Poster Presentation: Cyberinfrastructure Days, May 16-17, University of Arkansas, Fayetteville, AR.

41. SPEAROT, D.E. (2010) Molecular Dynamics Simulations and the Importance of Advanced Cyberinfrastructure Resources, May 17, 2010. Cyberinfrastructure Days at the University of Arkansas Research Presentation.

42. SUDIBJO, A., ULLAL, V. & SPEAROT, D. (2010): *Molecular Dynamics Simulations of Diffusion in PDMS and PDMS-based Nanocomposites*. Poster Presentation: Cyberinfrastructure Days, May 16-17, University of Arkansas, Fayetteville, AR.

43. WARN, S. & APON, A. (2010): *Accelerating Image Registration on Hybrid Clusters*. Poster Presentation: Cyberinfrastructure Days, May 16-17, University of Arkansas, Fayetteville, AR.

44. WEERASINGHE, J., HLINKA, J., STEPKOVA, V. & BELLAICHE, L. (2010): Dielectric tunability of SrTiO3 in the THz regime: A Theoretical Study. Poster Presentation: Cyberinfrastructure Days, May 16-17, University of Arkansas, Fayetteville, AR.

45. APON, A. (2010) Invited presentation of "High Performance Computing at the University of Arkansas" to the Arkansas Academy of Computing Annual Meeting, Fayetteville, Arkansas, April 10, 2010.

46. TERDALKAR, S., ZHANG, S. L. & RENCIS, J.J. (2010): *Migration of Double Vacancy Defects in Graphene Sheets*. Oral Presentation: 94th Annual Meeting of the Arkansas Academy of Science, April 9-10, University of Arkansas at Little Rock. Little Rock, AR.

47. BELLAICHE, L., AKBARZADEH, A., ALBRECHT, D., KORNEV, I., LIZENKOV, S., PONOMAREVA, I., PROSANDEEV, S., RAHMEDOV, D., REN, W. & SICHUGA, D. (2010): *Discovery of Original Phenomena in Low-dimensional Ferroelectrics and Multiferroics*. Invited Presentation at the 2010 MRS Spring Meeting, April 5-9, San Francisco, CA.

48. PROSANDEEV, S. & BELLAICHE, L. (2010): *Properties of diluted antiferromagnets from atomistic simulations*. Presentation at the 2010 APS March Meeting, March 15-19, Portland, OR.

49. APON, A. (2010) Invited presentation of "Infrastructure for High Performance Computing" to the National Academies Regional Meeting, Little Rock, Arkansas, March 9, 2010.

50. ALBRECHT, D., BELLAICHE, L., KORNEV, I., LISENKOV, S., PONOMAREVA, I., PROSANDEEV, S., RAHMEDOV, D., REN, W., SICHUGA, D. & WANG, D. (2010): *Antiferrodistortive-induced phenomena in ferroelectrics and multiferroics*. Invited presentation at the 2010 Workshop on Advances in the Fundamental Physics of Ferroelectrics and Related Materials, January 31 - February 5, Aspen, CO.

51. BEA, H. (2010): *Giant axial ratio multiferroic BiFeO3 phase*. Invited presentation at the 2010 Workshop on Advances in the Fundamental Physics of Ferroelectrics and Related Materials, January 31 - February 5, Aspen, CO.

52. KIAT, J. M., BOGICEVIC, C., REN, W., BELLAICHE, L., HAUMON, R., DKHIL, B. & CARREAUD, J. (2010): *Relaxors and morphotropic compounds: What happens when size is reduced?*. Invited presentation at the 2010 Workshop on Advances in the Fundamental Physics of Ferroelectrics and Related Materials, January 31 - February 5, Aspen, CO.

53. WEERASINGHE, J., HLINKA, J., STEPKOVA, V. & BELLAICHE, L. (2010): *Dielectric tunability of SrTiO3 in the THz regime: a theoretical study*. Poster at the 2010 Workshop on Advances in the Fundamental Physics of Ferroelectrics and Related materials, January 31 - February 5, Aspen, CO.

54. WANG, D., BELLAICHE, L. & HLINKA, J. (2010): *Dielectric response of Pb(Zr,Ti)O3 nanodots: a first-principles-based study*. Poster at the 2010 Workshop on Advances in the Fundamental Physics of Ferroelectrics and Related materials, January 31 - February 5, Aspen, CO.

55. REN, W., SICHUGA, D., PROSANDEEV, S. & BELLAICHE, L. (2010): *Anomalous features in BiFeO3 nanodots: a first-principles-based study*. Poster at the 2010 Workshop on Advances in the Fundamental Physics of Ferroelectrics and Related materials, January 31 - February 5, Aspen, CO.

56. PROSANDEEV, S. & BELLAICHE, L. (2010): *Properties of BiFeO3 diluted with non-magnetic elements: Atomistic computations*. Poster at the 2010 Workshop on Advances in the Fundamental Physics of Ferroelectrics and Related materials, January 31 - February 5, Aspen, CO.

57. DUPE, B., INFANTE, I. C., LISENKOV, S., LEONTYEV, I. N., TOUPET, H., BIBES, M., FUSIL, S., JACQUET, E., JANOLIN, P., GENESTE, G., LEMARREC, F., BELLAICHE, L., BARTHELEMY, A. & DKHIL, B. (2010): *Novel and original features on the model multiferroic BiFeO3 under strain effects*. Poster at the 2010 Workshop on Advances in the Fundamental Physics of Ferroelectrics and Related materials, January 31 - February 5, Aspen, CO.

58. CHOUDHURY, N., WALIZER, L., LISENKOV, S. & BELLAICHE, L. (2010): *Unusual phenomena in compositionally modulated BST systems*. Poster at the 2010 Workshop on Advances in the Fundamental Physics of Ferroelectrics and Related materials, January 31 - February 5, Aspen, CO.

59. ALBRECHT, D., LISENKOV, S., REN, W., RAHEDOV, D., KORNEV, I. A. & BELLAICHE, L. (2010): *Ferromagnetism in multiferroic BiFeO3 films: a first-principles-based study*. Poster at the 2010 Workshop on Advances in the Fundamental Physics of Ferroelectrics and Related materials, January 31 - February 5, Aspen, CO.

60. ZHANG, S., SHU, T., TERDALKAR, S., SHAN, H. & RENCIS, J.J. (2009): *Nanomechanics of Graphene Sheet*. Applied Mechanics Division, 2009 ASME International Mechanical Engineering Congress and Exposition, November 13-19, Lake Buena Vista, FL.

61. APON, A. (2009) Invited presentation of “Cyberinfrastructure and Arkansas” at the ARE-ON Steering Committee and Inauguration Event, Fort Smith, Arkansas, October 26, 2009.

62. APON, A. (2009) Invited presentation of “Writing a Supercomputer Proposal for the National Science Foundation’s Major Research Instrumentation Solicitation” at the Oklahoma Supercomputing Symposium, Norman, Oklahoma, October 7, 2009.

63. APON, A. (2009) Invited presentation of “CI-TRAIN EPSCoR Track-2 Project” at the 2009 Arkansas NSF EPSCoR Annual Conference, Little Rock, Arkansas, October 2, 2009.

64. BELLAICHE, L., LISENKOV, S., PONOMAREVA, I. & RESTA, R. (2009): *Complex Phenomena in Ba0.5Sr0.5TiO3 alloys from atomistic simulations*. Invited presentation at the International Symposium on Integrated Ferroelectrics and Functionalities (ISIF), September 27-30, Colorado Springs, CO.

65. BELLAICHE, L., KORNEV, I., LISENKOV, S., PONOMAREVA, I., PROSANDEEV, S., RAHMEDOV, D. & SICHUGA, D. (2009): *Discovery of original phenomena in ferroelectrics, ferromagnetics and multiferroics from atomistic simulations.* Invited presentation at the 2009 Villa Conference on Complex Oxide Heterostructures (VC-COH), September 13-18, St. Thomas, US Virgin Islands.

66. BELLAICHE, L., LISENKOV, S., PONOMAREVA, I. & RESTA, R. (2009): *Atomic Insight Into Complex Phenomena in Ferroelectric Alloys*. Invited presentation at the XVIII International Materials Research Congress, August 16-21, Cancun, (Mexico).

67. LOUIS, L., GEMEINER, P., PONOMAREVA, I., BELLAICHE, L., GENESTE, G., MA, W., SETTER, N. & DKHIL, B. (2009): *Low-symmetry phases in ferroelectric nanowires*. Presentation at the IMF-ISAF-2009, 12th International Meeting on Ferroelectricity and 18th IEEE International Symposium on Applications on Ferrolectrics, August 23-27, Xi'an, China.

68. BIN-OMRAN, S. & BELLAICHE, L. (2009): *A first principles study of ferroelectric phase transition in Pb0.4Zr0.6TiO3 Ultrathin films*. Presentation at the IMF-ISAF-2009, 12th International Meeting on Ferroelectricity and 18th IEEE International Symposium on Applications on Ferrolectrics, August 23-27, Xi'an, China.

69. INFANTE, I. C., DUPE, B., LISENKOV, S., PONOMAREVA, I., BELLAICHE, L., JANOLIN, P., GENESTE, G., GEMEINER, P., DKKHIL, B., BEA, H., FUSIL, S., ALLIBE, J., JACQUET, E., BIBES, M. & BARTHELEMY, A. (2009): *Effect of epitaxial strain and temperature on structural and multiferroic properties of BiFeO3 thin films: theory and experiments*. Presentation at the IMF-ISAF-2009, 12th International Meeting on Ferroelectricity and 18th IEEE International Symposium on Applications on Ferrolectrics, August 23-27, Xi'an, China.

70. JANOLINE, P. & BELLAICHE, L. (2009): *Temperature-misfit strain phase diagram of relaxor Pb(Sc1/2Nb1/2)O3 thin films*. Presentation at the IMF-ISAF-2009, 12th International Meeting on Ferroelectricity and 18th IEEE International Symposium on Applications on Ferrolectrics, August 23-27, Xi'an, China.

71. JANOLIN, P. & BELLAICHE, L. (2009): *High-pressure on ferroelectrics: structural changes and new phenomena*. Presentation at the IMF-ISAF-2009, 12th International Meeting on Ferroelectricity and 18th IEEE International Symposium on Applications on Ferrolectrics, August 23-27, Xi'an, China.

72. OSTAPCHIK, T., PETZELT, J., HLINKA, J., BOVTUN, V., KUZEL, P., PONOMAREVA, I., LISENKOV, S., BELLAICHE, L., TKACH, A. & VILARINHO, P. (2009): *New aspects of the soft-mode dynamics in BaxSt1-xTiO3*. Presentation at the IMF-ISAF-2009, 12th International Meeting on Ferroelectricity and 18th IEEE International Symposium on Applications on Ferrolectrics, August 23-27, Xi'an, China.

73. TERDALKAR, S. S., ZHANG, S. L. & RENCIS, J.J. (2009): *Nanomechanics of a Graphene Sheet*. Oral and Poster Presentations, 10th US National Congress on Computational Mechanics (USNCCM-10), July 16-19, Columbus, OH.

74. ZHANG, S. L., TERDALKAR, S. S., HUANG, S., YUAN, H., ZHU, T. & RENCIS, J.J. (2009): *Nanomechanics of a Graphing Sheet*. Oral Presentation, The 2009 Joint ASCE-ASME-SES Conference on Mechanics and Materials, June 24-27, Blacksburg, VA.

75. INFANTE, I. C., DUPE, B., LISENKOV, S., PONOMAREVA, I., BELLAICHE, L., GENESTE, G., JANOLIN, P., DKHIL, B., PETIT, S., BEA, S., FUSIL, S., ALLIBE, J., BOUZEHOUANE, K., JACQUET, E., BIBES, M. & BARTHELEMY, A. (2009): *Role of epitaxial strain and temperature on structural and multiferroic properties of BiFeO3 thin films: theory and experiments*. Presentation at the GDF-Multiferroic meeting, June 17, Paris, France.

76. INFANTE, I. C., BEA, H., FUSIL, S., ALLIBE, J., JACQUET, E., BIBES, M., BARTHELEMY, A., DUPE, B., GENESTE, G., GEMEINER, P., DKHIL, B., LISENKOV, S., PONOMAREVA, I. & BELLAICHE, L. (2009): *Role of epitaxial strain and temperature on structural and multiferroic properties of BiFeO3 thin film: Theory and experiments*. Presentation at the 2009 European Materials Research Society spring meeting, June 8-12, Strasbourg, France.

77. BIN-OMRAN, S., PONOMAREVA, I. & BELLAICHE, L. (2009): *Unusual Behavior of Polarization-Strain Coupling in PZT Ultrathin Films*. Poster at the 2009 International Conference for Nanotechnology Industries, April 5-7, Riyadh, Saudi Arabia.

78. MAKSYMOVYCH, P., JESSE, S., LISENKOV, S., BELLAICHE, L., BALKE, N., HUIJBEN, M., RAMESH, R., KALININ, S. V. & BADDORF, A.P. (2009): *Ferroelectric Size-effect on Nanoscale BiFeO3 Films in Ultra-High Vacuum*. Presentation at the 2009 MRS Spring meeting, April 13-17, San Francisco, CA.

79. TERDALKAR, S. S., ZHANG, S. L. & RENCIS, J.J. (2009): *Atomic Fracture Mechanism of Graphing Sheet*. Oral Presentation, 2009 MRS Spring Meeting, April 13-17, San Francisco, CA.

80. TERDALKAR, S., ZHANG, S. & RENCIS, J.J. (2009): *Atomic Fracture Mechanism of Graphing Sheet*. Oral and Poster Presentations, 93rd Annual Meeting of the Arkansas Academy of Science, April 3-4, University of the Ozarks, Clarksville, AR.

81. KORNEV, I., PROSANDEEV, S., LAI, B., NAUMOV, I., PONOMAREVA, I. & BELLAICHE, L. (2009): *First Principles Multiscale Computational Modeling of Ferroelectric nanostructures*. Invited presentation at the Nanosystem Enginerring and Biophotonics (NEBO'09) international conference, March 30 - April 1, Ecole Normale Superieure de Cachan.

82. MAKSYMOVYCH, P., JESSE, S., LISENKOV, S., BELLAICHE, L., BALKE, N.,

HUJBEN, M., RAMESH, R., BADDORF, A. P. & KALININ, S.V. (2009): *Ferroelectric size-effect in BiFeO3 films in ultra-high vacuum*. Presentation at the 2009 APS March Meeting, March 16-20, Pittsburgh, PA.

83. PROSANDEEV, S. & BELLAICHE, L. (2009): *Controlling double vortex states in low-dimensional dipolar systems*. Presentation at the 2009 APS March Meeting, March 16-20, Pittsburgh, PA.
84. TERDALKAR, S. S., RENCIS, J. J. & ZHANG, S. (2009): *Recent Advances in the Atomic Fracture Mechanism of Graphing Sheet*. Poster Presentation, From Abstract to Contract: 2nd Annual University of Arkansas Graduate Student Research Symposium and Career Network, February 20 and March 10, University of Arkansas, Fayetteville, AR.
85. WALIZER, L., LISENKOV, S., PONOMAREVA, I. & BELLAICHE, L. (2009): *Modeling of compositionally graded barium strontium titanate from first principles*. *I*nvited presentation at the 2009 Workshop on Fundamental Physics of Ferroelectrics, February 8-11, Williamsburg, VA.
86. REN, W., PONOMAREVA, I. & BELLAICHE, L. (2009): *Properties of BiFeO3 nanodots from first principles*. Poster at the 2009 Workshop on Fundamental Physics of Ferroelectrics, February 8-11, Williamsburg, VA.
87. RAHMEDOV, D. & BELLAICHE, L. (2009): *Magnetoelectric coefficients of BiFeO3 from first principles*. Poster at the 2009 Workshop on Fundamental Physics of ferroelectrics, February 8-11, Williamsburg, VA.
88. AL-BARAKATY, A., PROSANDEEV, S. & BELLAICHE, L. (2009): *Finite-temperature properties of PMN-PT from atomistic simulations*. Poster at the 2009 Workshop on Fundamental Physics of Ferroelectrics, February 8-11, Williamsburg, VA.

4.5 Other Research Product

1. DOMASCHKO , M. Developed a set of floating point subroutines with unlimited precision at West Virginia State University. These make feasible computer computations involving numbers with tiny differences, which would otherwise be rounded out.

4.6 Awards and Recognition

1. PAI, N., SARASWAT, D. & SARKAR, S. (2010): *Utilizing Cyberinfrastructure for Watershed Modeling*. Poster Presentation: Cyberinfrastructure Days, May 16-17, University of Arkansas, Fayetteville, AR. First place in category.
2. SLEEZER, R., KRASINSKI, J.S. & SALAMO, G. (2010): *Nonlinear Transmission Lines for Ultrafast Electronics*. Poster Presentation: Cyberinfrastructure Days, May 16-17, University of Arkansas, Fayetteville, AR.
3. WARN, S. & APON, A. (2010): *Accelerating Image Registration on Hybrid Clusters*. Poster Presentation: Cyberinfrastructure Days, May 16-17, University of Arkansas, Fayetteville, AR. First place in category.
4. APON, A. (2010): Alumni Association's 2010 Faculty Distinguished Achievement Award for Service, Alumni Association of University of Arkansas.

5. TERDALKAR, S., ZHANG, S. & RENCIS, J.J. (2009): *Atomic Fracture Mechanism of Graphing Sheet*. Oral and Poster Presentations, 93rd Annual Meeting of the Arkansas Academy of Science, April 3-4, University of the Ozarks, Clarksville, AR. 2nd Place for Excellent Scholarship in Graduate Physical Sciences
6. BELLAICHE, L. (2009): Alumni Association's 2009 Faculty Distinguished Achievement Award in Research, Alumni Association of University of Arkansas.

5.0 Significant Project Activities

5.1 Introduction to Computational Thinking, SC Education Workshop

Where: University of Arkansas, Fayetteville
When: August, 2009
Number of participants: 23, including 1 from West Virginia
Summary: This one-week workshop, which was competitively awarded, was produced and delivered by the SC Education program, with lead Dr. Robert Pannoff. Participants included faculty from eight states. About a dozen participants were from Arkansas, including ASU, UCA, UAF, UAFS, and UALR.

5.2 Oklahoma Supercomputing Conference project participant gathering

Where: University of Oklahoma
When: October 6, 2009
Number of CI-TRAIN participants: 19
Summary: The OU Supercomputing Symposium is a regional event that Arkansas participants can drive to. Four participants came from West Virginia. In addition to attending symposium sessions and providing two presentations, CI-TRAIN project participants had a dinner and discussion session and used the time to plan the project Kick-Off meeting.

5.3 CI-TRAIN Project Kick-Off Meeting and Introduction to Scientific Visualization Training

Where: Texas Advanced Computing Center
When: January 27-29, 2010
Number of CI-TRAIN participants: 23, plus additional staff from TACC
Summary: This meeting was organized around the TACC delivery of Introduction to Scientific Visualization. In addition to the training and tour of TACC supercomputing and visualization facilities, project participants gathered for two dinner sessions to learn how to apply for TeraGrid accounts, and to plan the weekly CI-TRAIN Lecture Series.

5.4 CI Days at the University of Arkansas

Where: University of Arkansas, Fayetteville
When: May 16-17, 2010
Number of participants: about 160
Summary: This event was hosted as a part of the CI Campus Coalition community and was advertised widely. It included Jim Bottum, CIO of Clemson University, as Keynote speaker and other national and local expert speakers. CI Days provided an opportunity for faculty, students, researchers, and educators to become aware of and to engage in the use of cyberinfrastructure resources that are available on and from the University of Arkansas campus. Faculty members

were invited to submit posters with their students for the poster session on May 16. Prizes were given for the best student posters. Posters covered any aspect of the use or development of cyberinfrastructure, computational science and engineering, and large-scale data analysis and visualization. CI Days was open to all disciplines -- sciences, engineering, business, agriculture, arts, and humanities. http://hpc.uark.edu/cidays

5.5 Big Data for Science Virtual School

Where: University of Arkansas, Fayetteville
Virtual School of Computational Science and Engineering Summer School Workshop
When: July 26-30, 2010
Number of participants: 20 participants, including one from UAPB, and 18 from UAF, and additional support staff from AHPCC
Summary: Participation in this workshop is competitively awarded. The workshop is delivered using high definition video to a classroom on the UAF campus. Students participate in lectures and hands-one exercises. This particular workshop helps to builds the capability of the University and state in data-driven science. The AHPCC waived the normal $100 registration fee and is supporting the costs of the workshop through the use of ASTA funding.

5.6 Yearly CI-TRAIN Project Meeting

Where: Pittsburgh, PA, in conjunction with TeraGrid '10
When: August 1-2, 2010
Number of participants: Approximately 24
Summary: This event was the annual project progress report meeting and time to plan the next year's activities.

5.7 Regular CI-TRAIN Teleconference and Videoconference Lecture Series (CI-TRAINing Days)

The following CI-TRAIN Lectures were presented. The number of attendees varied from approximately 8 to 24, with an average of 15.

1. CI-TRAIN Web site Demonstration
   Presenter: Frederick Limp, Professor of Geosciences, University of Arkansas, Fayetteville
   When: January 5, 2010
2. Adobe Connect Software Demonstration
   Presenter: Jackson Cothren, Director of the Center for Advanced Spatial Technology, University of Arkansas, Fayetteville
   When: February 9, 2010
3. Dim Dim Software Demonstration
   Presenter: Jonathan Caldwell, Director of IT Services, West Virginia Research Organization
   When: February 9, 2010
4. Software Tools for Geographic Information Systems
   Presenter: Jason Tullis, Assistant Professor of Geosciences, University of Arkansas, Fayetteville
   When: February 16, 2010
5. Advanced Visualization Tools

Presenter: Doug E. Spearot, Assistant Professor of Mechanical Engineering, University of Arkansas, Fayetteville
When: February 23, 2010
This training session covered the basics and use of available tools (Ensight, Ovito, VisIT and Paraview) for visualization of unstructured data, such as that generated via molecular dynamics simulations. The training session emphasized how visualization is a key ingredient that allows scientific discovery during simulation.

6. University of Kentucky Cyberinfrastructure Days
   Presenter: Tony Szwilski, Director of Center for Environmental, Geotechnical and Applied Sciences, Marshall University
   When: March 5, 2010

7. Linux 101 – Video
   Presenter: Ed Aractingi, Assistant Director of IT Infrastructure Systems, Marshall University
   When: April 1, 2010
   Presented an overview of Linux and how to get started using it.

8. Star 101 – PDF
   Presenter: Jeff Pummill, Manager for CI Enablement, University of Arkansas, Fayetteville
   When: April 8, 2010
   The presentation was a high-level overview of the current HPC system at the University of Arkansas and its basic functionality:
   1. System Hardware and Software
   2. Logging In
   3. Compiling a basic MPI source.
   4. Running jobs with the MOAB scheduler
   5. Additional useful system commands.

9. How To Purchase A Cluster – PDF
   Presenters: Jeff Pummill, Manager for CI Enablement, University of Arkansas, Fayetteville
   Dana Brunson, Senior Systems Engineer of OSU-HPC Center, Oklahoma State University
   When: April 15, 2010
   The presentation covered basic information and practices involved with making a sound choice when buying a cluster, including:
   1. Intended purpose for the cluster?
   2. Infrastructure to support proposed system?
   3. Appropriate personnel for level of complexity?
   4. List of desired components incl. software stack?
   5. RFQ vs. Sole Source/Approved vendor
   6. Dealing with the Vendor

10. Benchmarking Your System – PDF, Audio with slides
    Presenter: Wesley Emeneker, Computer Science Doctoral Candidate, University of Arkansas, Fayetteville
    When: April 22, 2010
    The presentation covered basic benchmarking strategies and ways to characterize system performance:
    1. What hardware can be benchmarked

2. What you actually want to benchmark
3. Popular benchmarking software
4. How to get "fair" numbers

11. Overview of the Shared Computational Science Programs at the Ralph Regula School of Computational Science – PDF
Presenter: Steven Gordon, Interim Co-Executive Director, Ohio Supercomputer Center
When: April 29, 2010
This presentation provided an overview of both a baccalaureate minor program in computational science and a newly initiated Associate degree program. Both programs are competency-based and have been reviewed by both academic and industry partners. The major categories of competencies were discussed along with their implementation in academic courses. The institutional arrangements that allows students to take courses from other institutions was also reviewed. Details for the programs can be found at www.rrscs.org.

12. Basic OpenMP - PDF, Audio with slides
Presenter: Don McLaughlin, Research Associate, Computer Science & Electrical Engineering, West Virginia University
When: May 6, 2010
OpenMP is a programming framework for developing parallel processing software. Unlike MPI, OpenMP is based on a shared memory architectural model. That is, OpenMP-based software assumes that all processes have direct access to a common pool of memory (or at least virtually so). This notion has important performance and scaling implications. This session provided a basic introduction to OpenMP. Specific topics covered include:
1. Basic concepts of OpenMP
2. OpenMP and HPC System architectures
3. Developing parallel programs using OpenMP
4. Compiling and Running OpenMP based software
5. Learning more - resources for learning about OpenMP

13. MPI - PDF, Audio with slides
Presenter: Venkat Gudivada, Professor of Engineering, Marshall University
When: May 13, 2010
MPI is a message-based computational paradigm for developing applications that leverage high performance computing (HPC) systems. This session provided a basic introduction MPI through the discussion of the following topics:
1. Basic concepts of MPI
2. MPI and HPC System architectures
3. Developing HPC applications using MPI
4. Compiling and Running MPI applications
5. Resources for learning about MPI

14. CUDA: NVIDIA's GPGPU Platform - PDF, Audio with slides
Presenter: Seth Warn, Computer Science Doctoral Student, University of Arkansas, Fayetteville
When: May 20, 2010
The tutorial covered basic information about the use of GPU for general-purpose computation:
1. What are GPUs?

2. Overview of GPU products and practical issues surrounding their use.
3. Description of the GPU architecture and a CUDA programming example.

15. Python Series - Visual with Audio, More Info
    Presenters: Wesley Emeneker, Computer Science Doctoral Candidate, University of Arkansas – Fayetteville
    Seth Warn, Computer Science Doctoral Student, University of Arkansas, Fayetteville
    When: June 8, 2010
    The 3-hour session illustrated how to use Python in scientific computing and education. The tutorial covered:
    1. Basic science-related computing including numerical integration, statistical analysis, and linear algebra
    2. Post-processing data analysis
    3. Data Visualization
    The materials listed above take a practical approach to learning the syntax and features of the Python language while providing examples relevant to scientific computing users and educators. This tutorial utilized the NumPy, SciPy, and Matplotlib libraries. All software used in this tutorial is open-source and freely available for download.
16. Measuring and Improving Application Performance
    Presenter: David Chaffin, Associate Director, Arkansas High Performance Center, University of Arkansas, Fayetteville
    When: June 22, 2010
    The session illustrated how to measure and improve computer application performance for scientific computing and education. The tutorial covered:
    1. Examples of limitations that can make applications run slowly
    2. Demonstrations of system tools that allow measurement of the slowdown to understand where and why it occurred
    3. Discussion of techniques for avoiding slowdowns.
17. Source Code Control Tools - PDF
    Presenter: Venkat Gudivada, Professor of Engineering, Marshall University
    When: July 13, 2010
    The session illustrated the proper use of Revision Control packages to manage source code. The tutorial discussed:
    1. Revision control packages: CVS, Subversion, Mercurial, and Git.
    2. Comparison of the packages including strengths and weaknesses of each.
    3. Best practices for managing source code.

5.7 Other significant activities

1. Computer Science faculty and students have started working with people from the Department of Mathematics and Statics, Arkansas State University, on a statistics research project "Construction of Generalized Minimum Aberration Designs" which requires high performance computing platforms and algorithms because of the significant problem sizes. GPUs have been adopted and new memory hierarchy is considered. Some big cases could be only solved on supercomputers before. Now these unsolvable ones can be run on desktops. One conference paper has been published.

   Software on the top of cyberinfrastructure is critical. Secure storage systems and

heterogeneous computing will enable more researchers to use such a cyberinstrastructure. Since there is no existing software for this, they have been included in CI-TRAIN project to boost HPC and cyberinfrastructure at Arkansas State University. Multiple publications have been available.

2. Geomatics Field Schools offered by the University of Arkansas, Fayetteville and Co-Sponsored by NSF CI-TRAIN
   Developing skills in geomatics involves learning concepts, theory, and numeric techniques as well as the practical issues associated with the operation of data capture instruments (scanners, GPS, etc.) and the processing of data they acquire. In addition to the traditional class room programs and short courses described elsewhere on these pages the Center for Advanced Spatial Technologies has developed a series of intensive multi-week field training programs that combine intensive education in theory with practical experience with data capture and analysis. These programs are listed below.

   - University of Arkansas, Fayetteville Field Programs
     The Center for Advanced Spatial Technologies (CAST) will be offering a field training program that will introduce students to the latest methods in archaeological and urban geomatics and geophysics. The materials developed for these classes (tutorials, video's, how-to's, etc.) will be made publicly available. Likewise, the data collected during these field schools will be made publicly available through CI-TRAIN website.

   - United States
     Architectural, Engineering and Historic Geomatics: An NSF Sponsored 3D Recording and Visualization Training Program at the University of Arkansas for High School and College Students 2010
     Students will record significant architectural, engineering, and historic structures/sites using modern geomatics techniques including terrestrial laser scanning, aerial and terrestrial photogrammetry, GIS, and GPS (mapping and survey grade). 3D-computer visualization and animation technologies will also be used to enhance and re-create these areas. The class will cover the use of these methods across these areas via practical field and lab training in these methods. As a result they will be exposed to the full 3D lifecycle from acquisition (via multiple methods) though processing to visualization and presentation.

   - UCLA/UA Field Programs
     The Cotsen Institute for Archaeology at the University of California, Los Angles (UCLA) and the Center for Advanced Spatial Technologies (CAST) at the University of Arkansas are collaborating in the offering of a series of field training programs that will introduce students to the latest methods in archaeological geomatics and geophysics.
     Greece
     3D Archaeological Recording and Visualization Project at Eleusis (Geomatics) 2010
     This field school will introduce students to a broad range of 3D recording, mapping, animation and visualization methods. Students will be given hands-on instruction in these methods in the context of the major Greek archaeological site of Eleusis. Eleusis is world famous as the location of the Eleusian Mysteries – a significant Athenian religious festival - and is located some 14 miles west of Athens opposite the island of Salamis. The students will record the site's extensive architectural remains using terrestrial laser

scanning, photogrammetry, GIS and GPS. 3D computer visualization and animation technologies will be used to re-create areas of the site.

Egypt
Tell el-Amarna Archaeological Geophysics Project 2011
Students who enroll in the Tell el-Amarna Archaeological Geophysics Field School will spend six weeks on site using the latest in ground-based remote sensing technologies to reveal the buried secrets of Amarna, Egypt, the sacred city built by Pharaoh Akhenaten for the sun god. Students will explore the well-preserved ruins of the great capital city of New Kingdom Egypt, located halfway between Cairo and Luxor. During the field program, students will receive hands-on experience using non-invasive archaeological techniques including surface survey and near-surface geophysical prospection. Our research will concentrate on the North City, where we will map buried archaeological features with prospection technologies such as magnetometry and ground-penetrating radar. More about Amarna and ongoing research can be found at www.amarnaproject.com.

3. TeraGrid Campus Champion Monthly Teleconferences were attended by Jeff Pummill
4. NSF Workshop on High Performance Computing Center Sustainability
   Apon was a co-organizer of this event, held at Cornell University on May 3-5, 2010.
5. "Introduction to Parallel Computing on Ranger"
   Attended by: Venkat Gudivada
   Where: Cornell University
   When: May 19-20, 2010
6. GPU Symposium – Applications in Chemistry and Material Science
   Attended by: Jack Smith
   Where: Pittsburgh Supercomputing Center (PSC)
   When: July 28-30, 2010
7. Workshop on ABINIT and BIGDFT
   Attended by: Jack Smith
   Where: Pittsburgh Supercomputing Center (PSC)
   When: July 30, 2010
8. CI-TRAIN Mini-symposium: Using Cyberinfrastructure for Research and Healthcare
   Attended by: Various CI-TRAIN Participants and MU Faculty and Students
   Where: Marshall University and Online
   When: January 14, 2010 (Half day)
9. CI-TRAIN Seminar: CUDA Programming
   Presenter: Joe Fuller
   Attended by: Various CI-TRAIN Participants and MU Faculty and Students
   Where: Marshall University and Online
   When: January 28, 2010 (Half day)
10. Special Media Event: Announcement of Internet2 at Marshall University
    Arranged by: Jan Fox

Where: Marshall University
When: January 28, 2010

11. Special Media Event: Jay Rockefeller Visit to Visualization Lab Following UBB Mine Disaster
    Presented by: Tony Szwilski
    Assisted by: Jack Smith, Justin Chapman
    Where: Marshall Viz Lab
    When: April 7, 2010
12. CI-TRAIN Seminar: Scientific Visualization Using AVIZO
    Presenter: Jack Smith
    Where: Marshall Viz Lab
    When: April 8, 2010
    Attended by: Various MU Faculty and Students
13. CI-TRAIN Seminar: Multiphysics Modeling and Simulation Using COMSOL
    Presenter: Jack Smith
    Where: Marshall Viz Lab
    When: April 28, 2010
    Attended by: Various MU Faculty and Students
14. Advances in Cross-cutting Training, Learning and Collaborative Technologies, MSF 581
    Where: Marshall University
    When: Fall 2009
    Taught by: Tony Szwilski
    Assisted by: Justin Chapman, Jack Smith
    Attended by: 15 Masters Students
15. Applications of VR in Safety, MSF 482
    Where: Marshall University
    When: Winter 2010
    Taught by: Tony Szwilski
    Assisted by: Justin Chapman, Jack Smith
    Attended by: 5 Students
16. Parallel Programming, CS481
    Where: Marshall University
    When: Spring 2010
    Taught by: Venkat Gudivada
    Attended by: 7 Students
17. Introduction to High Performance Computing, CSCE 5013
    Where: University of Arkansas, Fayetteville
    When: Spring 2010
    Taught by: Amy Apon, in collaboration with Louisiana State University and Thomas Sterling
    Attended by: 8 Students
18. Data Center Tour for “Explore Engineering Program I”
    By: Jeff Pummill, Kelley Emeneker for Arkansas High Performance Computing Center
    Where: University of Arkansas, Fayetteville

When: July 14, 2010
Attended by 11 6th and 7th grade students and 2 undergraduate guides

19. Data Center Tour for "Explore Engineering Program II"
    By: Jeff Pummill, Kelley Emeneker for Arkansas High Performance Computing Center
    Where: University of Arkansas, Fayetteville
    When: July 21, 2010
    Attended by: 8th and 9th grade students and 2 undergraduate guides

20. Regular Demonstrations in Visualization Lab
    Where: Marshall University
    Presenter: Jack Smith, Tony Szwilski
    Assisted by: Justin Chapman, Mark Lewis
    When: Various dates across the year
    Attended by: Various businesses, government agencies, professional organizations, press, politicians and dignitaries, classes, high school groups, prospective students (and their parents), research groups and walk-in visitors.
    Until the campus High Performance Computing system is assembled and fully functional, no outreach activities have been yet delivered at West Virginia State University. Outreach activities to increase the public awareness, in terms of this technology (HPC tools) will be implemented and will involve campus faculty and students, as well as school teachers and K-12 students from neighboring schools within the state.

21. Cyberinfrastructure Days Preparation
    This CI-TRAIN project has been associated with High Performance Computing project at Arkansas State University. Dr. Jiang and Dr. Novobilski have worked with people from at least four colleges and one center for High Performance Computing requirements for cyberinfrastructure development. Multiple college deans and research office heads have joined the efforts as well.
    Two faculty members, two graduate students and five undergraduate students have attended the CI Days events at University of Arkansas, Fayetteville, in May, 2010. A date for the Cyberinfrastructure Days event at Arkansas State University is still being considered. Arkansas State University CI Days intends to let more local researchers realize the local computing environment.

5.8 Summary of Activities for 2009-2010 Project Year

This has been a very eventful year with many accomplishments. The University of Arkansas, Fayetteville hosted several significant workshops, including "Introduction to Computational Science", "Cyberinfrastructure Days", and "Big Data for Science", which have opened the door to many other faculty, students and technology workers and introduced them to the capabilities of cyberinfrastructure not only on campus, but also across the state of Arkansas and nationally. CI-TRAIN collaborative group has met each week with only a few off weeks during summer 2010 to plan and to present training. The CI-TRAIN Lecture Series has opened up discussion on campuses as well as increased the technical training of faculty, researchers, and students.
The CI TRAIN project team has participated in three face-to-face meetings, including meetings at the Oklahoma Supercomputing Symposium, the Project Kick-Off meeting at TACC with "Introduction to Scientific Visualization", and the Yearly Project Meeting held in conjunction

with TeraGrid ’10. Many collaborative relationships have been extended and built among more than a dozen partner institutions and 250 people across multiple states.

Testing Services

Executive Summary

The Department carries the following four ongoing internal objectives which are addressed through planning, training, motivation, supervision, monitoring and evaluation:

- Maximize available resources to continuously improve and expand services offered
- Maintain strict adherence to the established policies and procedures for each test delivered
- Treat all students with respect and consideration
- Treat all faculty and staff as key stakeholders

Policies and Standards:
Overall, the Department adheres to the Testing Standards established by the National College Testing Association (NCTA). In addition, each testing vendor establishes a set of policies and procedures that govern the administration of their tests. These include the ACT Policies and Procedures Manual, the CLEP Test Administration Policies and Procedures, the Praxis Manual, the MCAT Manual, LSAT Supervisor’s Manual, MPRE, GRE, GMAT, PPST, etc.

Noting the above compilations of policies and procedures, when delivering tests for different faculty members, the Testing Services Department must follow the test administration procedures specified individually by each college/university faculty member that administers tests through the center. The same is true for the colleges and universities outside University of Arkansas that send tests and procedures for the administration of their distance learning exams through the University.

Programs and/or Services Offered:
Testing Services administers many graduate and professional school admission tests, professional certification and licensure tests, exemption tests and exams offered by other state and national testing programs. The office also administers institutional admission tests, national exams, credit-granting tests and exemption exams among others. A complete list of tests offered by this office on a regular basis is included in Appendix A. Please note the number of tests that converted from paper-based to computer-based.

In addition to administering external test offerings, the Department provides test administration services and support to the academic departments within the University. Below is a list of the tests administered through the Testing Services:

Credit by Examination Programs

- College Level Examination Program (CLEP) College Board

- Defense Activity for Non-Traditional Education Support (DANTES) Defense Department Exams for College Credit
- DSST
- The National Occupational Competency Testing Institute (NOCTI)

Certification Exams

- American Board of Certification for Gastroenterology Nurses (**ABCGN**)
- Board of Certified Safety Professionals (BCSP)
- California Council for Interior Design Certification (**CCIDC**)
- Certification Commission of the National Association of Medical Staff Services (**CCN-NAMMS**)
- Castle ACE-GFI Certified Trainer Exam
- National Commission of Certified Crane Operators
- Nurse Examiner – Pediatric Sexual Assault
- Nurse Practitioner – Women's Health Care
- Oracle Certification Professional
- Walmart Certification for Storm Water Evaluator

Licensing Examinations

- American Social Workers Licensing Examination (**ASWLE**)
- Arkansas Teacher Certification Exams (**Praxis**)
- Arkansas Journeyman and Master Electrician Exam
- Foreign Service Officer Test (**FSO**)
- Certified Licensing Professional (**CLP**)

Remote Testing Services

- Remote Distance Learning Testing (exams from many colleges, domestic and overseas)
- COMPASS Remote Testing for other campuses

Placement Exams

Math Placement Exam (**MPT**)

- Reading Placement Exam (**RPT**)
- English Language Placement Test (**ELPT**) for international students
- Writing Placement Test through COMPASS
- English Placement Test (**EPT**)

Admission Tests

Miller's Analogies Test (**MAT**)

- American College Testing (**ACT**)
- COMPASS
- Test of English as a Foreign Language (**TOEFL**)

Graduate Admission Tests

- Graduate Record Exam (**GRE**)
- Graduate Management Admissions Test (**GMAT**)
- Law School Admissions Test (**LSAT)**
- Medical College Admission Test (**MCAT**)

Ethics Tests

- Multistate Professional Responsibility Exam (**MPRE**)

Exemption Tests

- Advanced Composition Exemption Exam (**ACEE**)

Testing Services is committed to serving test takers with disabilities by providing services and reasonable accommodations that are appropriate given the purpose of the test. Nonstandard testing accommodations are available for test takers who meet testing companies' requirements. Testing Services accommodated students' special testing needs by providing non-standard administrations to test takers with disabilities (e.g., visual, physical, hearing, learning, etc.). In the 2008-2009 Academic Year, **26 examinees with documented disabilities requested and received non-standard testing accommodations.**

Non-standard testing is offered upon the request of the testing companies. Testing Services works with the Center for Educational Access to ensure each test is administered exactly as prescribed Accommodations provided during 2009-10 included extended time, unlimited breaks, a private room, a test reader, an amanuensis, and assistive software and hardware.

Support is provided to the academic departments in the development and maintenance of their placement testing programs. In the past five years, working with the academic departments, Testing Services has administered tests for the Math, Reading, English, Journalism and Nursing Departments.

During 2009-10 Academic Year **approximately 11,000 students, prospective students and those in the community** who were satisfying admission/degree requirements at UA and other institutions were tested. Conservatively, over the next five years, overall testing volumes are expected to grow. The anticipated driver of this growth will be nationally projected increases in Distance Learning testing, which Testing Services has seen most recently at the University of Arkansas. That trend will also drive the Distance Learning testing offered to area students taking on-line courses at other colleges and needing local places to take courses tests. Other increases are anticipated in the customized testing services for business & industry.

Often, UA students, staff or northwest Arkansas residents must satisfy testing requirements of other institutions to fulfill educational, certification, or licensure programs. Testing Services provides individual and correspondence test proctoring services to support the needs of these individuals. Also, standard test administrations are scheduled through special request for those taking tests not normally administered by this office. During the past year, Testing Services accommodated 109 individuals for such tests.

With the exception in the month of June where Testing Services administers the most tests, demand for testing is highest between November and April (See Appendix B). The competition for space to administer tests continues to be a major challenge. Test sessions are scheduled using Testing Services' Computer-based Test Centers (CBT and GMAT) containing only 32 computers and paper-based testing seating 45 examinees. To support large state and national test administrations such as Praxis, tests are administered on Saturdays and Sundays in other buildings across campus. This year a total of 3 tests were administered on Sundays.

To better manage limited space and personnel resources while increasing services to current students, alumni, and northwest Arkansas residents, Testing Services offers many test sessions during Saturdays, Sundays and a few evenings. During the past year, a total of 518 tests were administered: 169 sessions administered Saturdays, 27 administered late afternoon or evening hours, 3 sessions administered Sundays and the rest were scheduled during the week.

New Initiatives

During the past year, some changes took place in administration formats of the existing computer-based testing programs. Testing Services has adapted to many changes that took place this year and added new exams to accommodate more test-takers in the larger community. Included in this category are IELTS which began in October 2009 and the Medical College Admission Test which will begin with an administration in July of 2010.

Testing Services has been administering the COMPASS Exam in the past few years, but just completed the **Remote Testing Program** so that UA prospective students can test wherever they are located, saving them an unnecessary trip. With the remote testing the Office can quickly and conveniently arrange to have the COMPASS placement or diagnostic tests administered in over 550 supervised COMPASS testing centers across the country.

The COMPASS remote testing network is quick and convenient.

- When a student needing remote testing calls UA Testing Services, the student's ZIP code is simply used to locate the nearest COMPASS test site, and then the student is registered from within the COMPASS Internet Version software.
- A confirming email message is automatically sent to the student with information on how and where to take the test.
- Students pay a proctor fee (typically $20–$45) to the remote test site, and the COMPASS units used are charged to Testing Services' account. There are no other costs or charges for using the COMPASS Internet National Remote Testing Network.

Here are some of the benefits of the COMPASS Internet National Remote Testing Network:

- ***Enhance student access and enrollment***—Make UA more accessible to more students all over the country.

- ***Prepare students for academic success***—Testing remotely before students arrive on campus allows Office of Admission to make early interventions and advise students how best to prepare for the courses they wish to take. With their test results in hand, they can begin their preparations and hit the ground running once they arrive on campus.

Testing Services has had a few requests from individuals with disability who are not UA students requesting that they test at the University under non-standard conditions using the assistance of a reader. Proctoring non-standard exams is common, however, accommodating an examinee with a reading disorder who is not a University student brings the question about who will be responsible to pay for the reader. It seems that since Testing Services offers this service to the public, when a person with a disability comes along the Department is obligated to accommodate the student. Testing Services has searched also for alternatives to hiring a reader.

There are reports from other test centers with great success using Kurzweil 3000 to read tests. Basically the test is scanned and the software reads it to the student. The student can set the voice and speed at which it is read. They can also repeat as many times as they wish. This helps the student feel in control of their testing environment and not dependent on a reader, who might read too fast, too slow, or not loud enough for a particular student. This is especially helpful with a long test.

There are some things to be careful of.... for example making certain that the Internet connection is disabled as Kurzweil does not have a true lock down feature. Testing Services will consider purchasing this machine if more requests for this type of accommodation are received and funds become available.

Over the past years, Testing Services has generated ideas to increase funding for the office by making **proctoring services** available as an option for those who are taking online classes or are participating in distance learning programs across the country. Students who attend an out-of-state college or university, a college that does not provide testing services, or participate in an external degree or distance learning programs can test here at the University. Also, proctoring services are provided for individuals who are not able to test on a regularly scheduled test date, or for those who are required to take a test which is not offered at the University of Arkansas. An individual administration is any test administration that's purposely given to an individual in a standard manner. Proctoring services are provided per student request at a time mutually convenient for both the student and testing staff. To reduce the cost of administering these exams, the individual tests are scheduled at the time other exams are being administered.

With the hard work of the office staff posting the availability of proctoring services on Testing Services' website, **additional revenue was generated.** During this fiscal year a total of 109 such tests were administered and approximately $5000.00 was generated for the office.

Conservatively, over the next five years, overall testing volumes are expected to grow. The anticipated driver of this growth will be nationally projected increases in Distance Learning testing, which Testing Services has seen most recently at the University of Arkansas. That trend will also drive the Distance Learning testing offered to area students taking on-line courses at

other colleges and needing local places to take courses tests. Other increases are anticipated in the customized testing services for business & industry.

Worth noting is that while overall testing volumes over the past five years increased, there has been no increase in staff budget expenditures (beyond inflation) over that same period. This was accomplished by modifying testing schedules, changing staffing patterns, and introducing testing initiatives paid for by external clients.

By joining The Consortium of College Testing Centers (CCTC), a **free referral service** provided by the National College Testing Association (NCTA) to facilitate distance learning, Testing Services was able to make test administration services available to students at educational institutions away from their campuses. These services are provided in traditional paper-pencil formats as well as by on-line, web-based servers at some sites. Testing Services has received additional test takers through this free service which resulted in additional income for the office.

Testing Services was approached by Comira to become a testing site for their tests. Comira is a full-service testing company, providing services for licensing, certification, assessment, and educational testing programs. They offer computer- based testing for federal, state and not-for-profit licensing, and credentialing boards. The types of tests they offer include the California Chiropractic exams, the Virginia Board of Pharmacy exams, Federal Communications Commission exams, and many others. Testing Services will be negotiating a contract to start testing for them this year.

Testing Services is always looking for new ways to connect with UA students and provide up to date information in a way that is convenient for them and the rest of the campus community. With the increased popularity of online "social" media it's important to have a strong web presence. Because of this Testing Services redesigned its website this year to make it more user friendly, but more recently have begun posting Testing information on Twitter. The office has registered @testingservices on twitter.com and will use this account to update mainly UA Students as well as departments of test dates and deadlines along with links to the Testing Services website. Expanding our service online will be beneficial to the office and the campus as a whole in the months and years to come.

Testing Services is committed to providing test takers and their families a range of options when they register for tests and pay their fees, is sensitive to the current economic conditions and strives to keep costs to a minimum. Our primary goal is to maintain and continue developing a valid and reliable testing program that helps students reach their educational goals. The credit/debit card payment method is becoming prohibitively expensive because of the increasing costs of providing a secure payment platform that complies with industry security standards together with fees for credit card transaction processing.

The QPay system is the University of Arkansas' official on-line payment application for credit and debt transactions. To setup a QPay account, Testing Services contacted Credit Card Operations for merchant setup information. To add Testing Services to the QPay Administration interface, the QPay Security Request form was completed and filed with Credit Card Operations for any charge of QPay security or to remove a user's access to the QPay Admin interface.

Testing Services will be charged e-commerce transaction fees imposed by the bank monthly. The QPay system automatically assesses fees to the office cost centers monthly. Testing Services is now set to use this system.

Testing Services will abide by all rules set forth by the Treasurer's Office and will accept Visa, MasterCard, Discover and American Express. Credit /debit card payments can only be made online via ISIS and cannot be made over the phone, by regular mail or email.
Testing Services will continue accepting checks or cash, but students can now pay their test fee with a credit card.

Specific Accomplishments

Collaborating with UA departments

- Collaboration with the Director of the Office of Academic Success by scheduling and administering the Writing Placement Tests with each orientation session.
- Collaboration with the Office of Admissions to streamline joint processes regarding admission tests and referrals to Testing Services.
- Collaboration with the pre-medical advisors to bring back the Medical College Admission Test (MCAT) to UA and successfully negotiating and signing a new contract with Prometric that would be beneficial to both the institution's students and the company.
- Speaking to the Global Campus Office about the possibility of testing their students.
- Collaboration with the Credit Card Operations Office, adding QPay System and processing all test fees through this system which is the University of Arkansas' official on-line payment application for credit and debit transactions.
- Collaboration with deans, academic advisors and major professors to inform students of their eligibility & register to take the Advanced Composition Exemption Exam during 2009-2010 Academic Year.
- Consultation & collaboration with the Graduate Studies Department of Walton College of Business in regard to scheduling GMAT to accommodate all of their students and prospective students in the area.
- Cooperation and collaboration with different departments on campus to receive appropriate SLPT topics for international students who are interested in obtaining a teaching assistantship.
- Collaboration with the College of Engineering Dean and the Chair of the Physics Department to schedule the SLPT a few days before the fall semester begins to accommodate their international students who arrive on campus right before the beginning of the semester.
- Collaboration with the Center for Educational Access by reinforcing testing companies' deadlines and providing time for review and follow-up correspondence with regard to students with special needs.
- Collaboration with the Honor's College by administering the CLEP exam with the first few orientations specifically to accommodate honor students.
- Collaboration with the New Student Office by scheduling and administering the Reading and Math Placement Tests with each orientation session.

- Consulting, organizing and scheduling all institutional tests to accommodate the needs of different departments on campus particularly the International and Graduate Admissions.
- Collaboration with the Office of Admissions to streamline joint processes regarding admission tests and referrals to Testing Services.

Collaborating with Other Partners in Education

- Collaboration with the Office of Academic Success in setting up remote testing for COMPASS so that UA perspective students can test where they are located.
- Collaboration with area high school counselors by accommodating their students with disabilities with ACT information and non-standard testing.
- Collaboration with area high school counselors to share information regarding the CLEP testing program with their students.
- Complying with the continuing changes pertaining to the CBT tests such as TOEFL, Praxis, GRE and GMAT.

Expanding Test Program Offerings

- Successful negotiations and signing of contracts with testing companies with terms and agreements that allow Testing Services to serve students first and foremost and providing the office with the financial benefits of these test additions. Following are the new added tests:
    - MCAT (Medical College Admission Test), contract acquired and signed in April 2010, will start testing soon after the representative's visit to Fayetteville in June.
    - DSST.
    - Presently working on a new contract with Prometric so that other tests are administered at UA Testing Services as well.
    - Presently working on a new contract with Comira so that individuals from this area can test locally.
- Expansion of services by increasing the number of test sessions and tests.

Streamlining Procedures

- Adding QPay System and processing all test fees through this system which is the University of Arkansas' official on-line payment application for credit and debit transactions.
- Processing and monitoring all test registrations and issuing admission tickets.
- Maintaining and updating Testing Services website so information is available to students 24 hours a day/7-days a week. The site provides students with test dates and deadlines, registration procedures, test preparation, registration forms, other relevant test information, and links to testing companies and their websites.

Managing Resources Efficiently

- Worked with different testing companies to get new test contracts signed with terms and agreements that are financially beneficial to Testing Services. These tests include Medical College Admission Test, National Commission for the Certification of Crane Operators, Prometric and IELTS.
- Generating additional revenue for the office through offering new exams and proctoring services to all who require testing. Testing Services was able to pay for an approximately $40,000 renovation this year expanding the front office to accommodate all Work-Study students and the other main office staff.

Ongoing Programs

Test Administration – Testing Services administered 518 sessions of standardized tests to approximately 11,000 students during this year. The number of students tested this year is about the same as the previous years.
National test dates are set by the testing companies and usually fall on Saturdays. Institutional test dates, including CBT dates, scheduled by Testing Services on weekdays, evenings and weekends are liable in accommodating students' schedules and the University's admission requirements and orientations schedule.

International English Language Testing System (IELTS) – IELTS is designed to assess the language ability of candidates who need to study or work where English is used as the language of communication. IELTS International – the organization that is responsible for IELTS Test Center management in the US – is currently working towards a rapid and substantial expansion of the test center network in the US and UA Testing Services was part of that expansion and was approved as a test center in April of 2009. Training of the designated Test Center Administrator and proctoring staff was scheduled in August with the expected first test date of Saturday, September 26. In cooperation with the Spring International Language Center Testing Services invited applications from trainee examiners to be trained to rate the Speaking and Writing papers of the IELTS test. The training session had to be held over two consecutive weekends after applications were received. Due to scheduling conflicts, Examiners were not trained until October and first IELTS was finally administered on October 31, 2009.

Law School Admission Test (LSAT) – In anticipation of the new testing year, the Law School Admission Council (LSAC) gave a heads up that there are significant changes to LSAT test center regulations, effective with the June 8, 2009, administration. Here are some of the changes:

New identification requirements: Test takers are required to provide two types of acceptable identification in order to be admitted into the test room on the day of the exam: First, all candidates must have one current, valid (not expired) government-issued ID containing a recent and recognizable photo with signature. The second type of identification is determined by the **location** at which the candidate will be testing. If testing **within** the US , a government-issued ID and a thumbprint is required.

Acceptable forms of ID:

- Passport book
- Driver's License
- US military ID (US military personnel may present their US military ID card containing their name, photo, and signature.)

The first and last name on the ID must match exactly the name on the LSAT Admission Ticket. Among the not acceptable forms of ID are: Student IDs, Government-issued employment IDs, Social Security/Social Insurance cards, birth certificates, passport cards and expired IDs.

New grounds for dismissals—prohibited ELECTRONIC items: Test supervisors are authorized **not to admit** a test taker if that test taker is discovered to have in his or her possession an electronic device at the check-in table prior to the start of the test. Supervisors are also authorized to *dismiss* a test taker if that test taker is found in possession of, or using, an electronic device after having been checked in to the test room or after the test has started. Test takers found using or in possession of an electronic device during the break should also be ***dismissed*.**

Prohibited electronic items include, but are not limited to:

- electronic timers of any kind
- beeping watches, alarm watches, calculator watches
- cell phones, pay phones, beepers, pagers, personal digital assistants (PDAs)
- personal computers
- calculators
- photographic or recording devices
- listening devices
- headsets, iPods, or other media players

Procedural Changes
Perimeters of the vicinity near the testing area: Test takers are **NOT** permitted to leave the vicinity of the testing room. Prior to dismissing the test takers for the 15 minute break, and in order to avoid any misunderstanding among test takers, test center staff announces the exact perimeters of the vicinity where test takers may congregate during the break.

Day-of-the-test staff sign-in sheet: LSAC vouchers and the day-of-the-test staff sign-in sheet (new policy) are sent to centers. Vouchers must be completed with the required information, and the sign-in sheet must be signed by each staff person who worked on the day of the test

Signs provided by LSAC: To assist test center staff and to remind test takers about LSAT policies and procedures regarding prohibited items at the test center, LSAC provides signs. They are **prominently displayed** in an area where registrants may view them prior to reaching the check-in table. The signs provided are as follows:

- Prohibited items (list)

- Possession or use of a cell phone or any electronic device
- Notice—LSAT test registrants (regarding personal belongings)
- Items permitted in the test room in clear ziplock plastic bag ONLY (list)
- Items in ziplock bag may be accessed only at break
- Items permitted on desktop (list)
- Cancelling your score after today
- Acceptable forms of ID (list)
- Unacceptable forms of ID (list)

Castle Worldwide, Inc. – Most of these exams fall under the category of Professional Certification. The exams administered, the most, at the University of Arkansas are: American Board of Certification for Gastroenterology Nurses (ABCGN) Certified Gastroenterology Nurse (CGRN) American Council on Exercise Personal Trainer (ACE) Associate Kitchen & Bath Designer (AKBD) for the National Kitchen and Bath Association BOC Athletic Trainer Certification Exam (BOC) Certified Rehabilitation Registered Nurse (CRRN) Professional Traffic Operations Engineer (PTOE) Certification Exam

There are at least 43 different exams. Not all will be administered here at the University.
The following CASTLE testing programs will be offering examinations this fall:
International Society for Medical Publication Professionals (**ISMPP**)
Certified Licensing Professional (**CLP**): testing September 1-September 30, currently scheduling

- National Kitchen and Bath Association (**NKBA**)
- American Board of Certification for Gastroenterology Nurses (**ABCGN**)
- California Council for Interior Design Certification (**CCIDC**)
- Regulatory Affairs Professional Society (**RAPS**)
- Certification Commission of the National Association of Medical Staff Services (**CCN-NAMMS**)
- American Healthcare Radiology Administrators (**AHRA**)
- Board of Certification for the Athletic Trainer (**BOC**)
- Rehabilitation Nursing Certification Board (**RNCB**)

These exams will be administered in addition to our year-round examinations (i.e. American Council on Exercise (**ACE**) and the National Interpreter Certification (**NIC**).
GRE General Test – Below are the changes to the GRE content that more closely align with the skills students need to succeed:

- **The Verbal Reasoning measure** places a greater emphasis on higher cognitive skills, making it a truer, deeper assessment of the test taker's ability to understand what they read and how to apply their reasoning skills.
- **The Quantitative Reasoning measure** tests the same basic mathematical concepts, but emphasizes the data interpretation and real-life scenarios a test taker will encounter, to better gauge their skills.

- **The Analytical Writing measure** asks test takers to provide more focused responses to questions, so they can more accurately demonstrate their skill in directly responding to the task presented.

There will be changes to the test design that provide test takers a friendlier, more flexible test-taking experience. Examinees will find new features that allow them the freedom to use their own personal test-taking strategies. Here's an overview of what your candidates can expect: The new test has a test-taker friendly design. Test takers can change/edit, skip and come back to questions within a section, and a new on-screen calculator is available in the Quantitative Reasoning section. There will also be new types of questions. The Verbal Reasoning section focuses more on text-based material, while the Quantitative Reasoning section includes new types of questions, many featuring real-life scenarios.

Test candidates save 50% on their test fee when they take the GRE revised General Test between August 1 and September 30, 2011. Scores will be reported by mid-November 2011 if candidates test during this period.
Changes to scoring that deliver more simplicity in distinguishing performance differences between your candidates:

The revised test features a new score scale that reports the Verbal Reasoning and Quantitative Reasoning measures **on a 130–170 score scale, in 1-point increments** (vs. 200–800 in 10-point increments). Compressing the reporting metric means producing scores that won't exaggerate small performance differences between examinees.

PCAT – With advances in technology and keeping in line with testing industry standards, Pearson VUE Pearson is introducing a new computer-based test (CBT) version of the PCAT for the upcoming October 16, 2010, administration. The pilot will occur during the same timeframe as the October 2010 PCAT paper-based administration. The pilot will include a limited number of prequalified candidates who will be sitting for the exam. Because seating is limited for the October test date, a survey has been sent to candidates to indicate interest in taking the CBT version of the PCAT.

Following the October pilot, Pearson will be testing a limited number of candidates for the January 2010 administration as well.

Students are assured that the computer-based version of the PCAT is exactly the same as the paper-and-pencil form in terms of content, order of subtests, scoring, and reporting. The only difference is in the way the test is administered.

- Scores for both paper-and-pencil and CBT versions will be mailed during the same time frame.
- The same guidelines and rules for the paper-and-pencil version of the PCAT apply to the CBT version.
- Internet access, spell check, online calculator, and any other assisting computer functions will be unavailable during the CBT administration.
- Examinees will be required to type their essay responses for the CBT version.

- The CBT version of the PCAT will be administered at preselected Pearson VUE testing centers.

The PCAT computer-based test will be administered by Pearson VUE testing centers designed to handle capacity for computerized tests. The PCAT program plans to mirgrate to 100% computer-based testing by July 2011. From that time forward, Pearson VUE will no longer be administering the PCAT at their current Controlled Testing Centers and another test will be lost.

Electrical Licensing Exam – The Journeyman and Master Electrician Exams are a group of state-specific examinations that are used to determine whether or not an individual possesses the skills and knowledge necessary to work as a certified or licensed master electrician within a particular state. These exams are designed to assess the individual's knowledge and understanding of the National Electrical Code, the laws and regulations of the state in which the individual is pursuing a career, basic and advanced electrical theory, electrical layout, and electrical design.

The format and requirements of each exam varies from state to state. However, in most states, an individual interested in becoming a licensed or certified master electrician must have experience working as a journeyman electrician and must pass the master electrician exam administered by the state. We administer both the residential and commercial licensure exams.

Test of English As a Foreign Language (TOEFL) – TOEFL iBT (Internet-Base Test) is an English-proficiency test designed to assess English-language skills in academic settings. The test measures students' ability to use and understand English at the university level. And it evaluates how well students combine their listening, reading, speaking and writing skills to perform academic tasks.

There are two formats for the TOEFL test. The format one takes depends on the location of the test center. Most test takers take the iBT. University of Arkansas administers both the Internet-Based and the Paper-Based Test (PBT).

DSST – The DSST program is an extensive series of 37 examinations in college subject areas that are comparable to the final or end-of-course examinations in undergraduate courses. The DSST credit by exam program gives students the opportunity to receive college credit for life experience as a form of prior learning assessment. These exams are recommended for three semester hours of credit by the American Council on Education and the 37 exams are offered in diverse subject areas such as health, ethics, physical science, business, humanities, mathematics, finance and technology. From personal accounting to public speaking, from health to law enforcement or ethics, there's a DSST subject exam students can take.

The DSST program is owned by Prometric and has been placing students on the fast track to college degrees since 1986. Beginning in 2006, Prometric introduced an Internet-based version of the DSST tests at national test centers in colleges and universities.

All DSST test titles were available except for the "Principles of Public Speaking" test that remained a paper-based examination.

For the first time, Prometric's popular DSST Public Speaking exam will be available over the Internet! In addition to paper and pencil, offering the exam in IBT will give candidates the flexibility to take the test in whichever format they are most comfortable with. The use of new technology in Prometric's IBT software will also streamline the logistics for exam and allow scoring to be completed more quickly.

A recent enhancement to Prometric's IBT technology incorporates an "audio capture" feature, ideal for the speaking portion of the Public Speaking exam. Candidate workstations will need to be equipped with a high quality microphone, into which a candidate would deliver the speech portion of the test. This will create a digital file that will be sent electronically to the speech rater at the end of the exam, eliminating the need to ship audio tapes back and forth and speeding up the time the exam is "in transit." The IBT version of the Public Speaking DSST will be available sometime before the end of the year.

Non-Standard Test Administration – Non-standard testing accommodations are available for test takers who meet the Americans with Disabilities Act (ADA) eligibility criteria. Testing Services is committed to serving test-takers with disabilities by providing reasonable accommodations deemed appropriate. All requests for accommodations must be approved in accordance with the particular testing companies' policies and procedures, except for test takers who require only minor modifications to the standard testing environment due to documented medical needs. Minor modifications include special lighting, adjustable table or chair, and breaks for medication or snack. Documented medical needs may include diabetes, epilepsy, or chronic pain. These test takers must submit a letter of support from a medical doctor or other qualified professional stating the nature of the condition and the minor modifications requested. The letter with the appropriate registration form and fee are sent to the testing company for final approval.

In the 2009-2010 Academic Year, Testing Services tested 26 examinees with documented disabilities on an individual basis. Please see Appendix C for a complete list of different disabilities accommodated by Testing Services. Every effort was made to accommodate each and every student with a disability who needed to test at the University of Arkansas. This includes qualified individuals with disabilities who appear at the site with personal assistive devices or animals, such as service animals (dogs or other animals trained to assist), wheelchairs, walkers, canes, braces, speech or hearing aids, and other communication or mobility enhancing technology or animals.

Graduate Management Admission Test (GMAT) – University of Arkansas Testing Services started scanning palms for GMAT in February of this year. Once business schools expressed an interest in purchasing the palm-scanning technology which is manufactured by Fujitsu, Pearson VUE purchased this equipment and furnished all centers with this new technology which costs less than $1,000. The biometric technology is meant to catch students who hire others to take tests for them. These scanners are now in use at more than 400 centers in 107 countries.

The palm-scanning device captures an image of the blood coursing through test-takers' veins. Each person has a unique "palm-vein" image. A student whom a business school official

suspects of acting fraudulently could be asked to have their palm scanned, and that image could be checked against the image the student provided for the GMAT.

In September, Pearson VUE (the technical support company for GMAT) released several new exams which required the use of .NET 2.0 from Microsoft. Unlike many other types of software, Testing Services simply needs to add .NET 2.0 in addition to the current .NET 1.0 and will keep both versions rather than replacing one with the other. The PVTC Technical Requirements document was updated by the company to reflect this change.

The **Microsoft .NET Framework** is a software framework that works with Microsoft Windows operating systems. It includes a large library of coded solutions to prevent common programming problems and a virtual machine that manages the execution of programs written specifically for the framework.

Proctoring Service – The proctoring of examinations is a service offered by the University of Arkansas' Testing Services and is based on the availability of personnel, facilities, and technology to do so. This is for anyone needing to take tests in northwest Arkansas for another school or agency. Students participating in *distance learning* programs or *correspondence degree* programs, and professionals needing to be tested in order to receive *certification* in their field are now able to arrange to have their tests proctored at the University of Arkansas Testing Services facility.

Proctoring services are available to both UA students and non-students for a small fee. These tests are administered per student's request at a time mutually convenient for both the student and Testing Services' staff and test schedule. **There were a total of 109 individual administrations during the 2009-2010 Academic Year.**

Proctoring Services Include:

- Scheduling of the examination and collection of the proctoring fee directly from the student or school, as preferred by the school
- A quiet, well-lighted area within supervisory distance of the proctor
- Verification of any instructional materials allowed during the examination process
- Security of the sealed examination until it is opened in the student's presence at the beginning of the examination session
- Identification of the student by photo I.D. and verification of the student's signature on any certification accompanying the examination
- Return of all papers, including scratch sheets, examination questions, and the completed certification/forms directly to the school
- Termination of the examination, collection of exam materials, and immediate notification to the school of improper conduct on the part of the student or any evidence that there has been a violation of the examination process.

The Consortium of College Testing Centers (CCTC) is a free service offered by The National College Testing Association (NCTA) through which member institutions may list themselves as

available to provide proctoring services for distance learning students from other institutions. The listing carries their testing schedule, contact information, and applicable fees. The list of CCTC participants is available to the public free, from the NCTA Home Page. University of Arkansas is one of the test centers currently listed on the NCTA as a center which offers proctoring services and this is how so many test-takers find out about proctoring services at the University of Arkansas.

College Level Examination Program (CLEP) – CLEP exams are offered throughout the year at University of Arkansas Testing Services. Each test center sets its own testing schedule and registration procedure. CLEP testing takes place normally once a month, but during summer months the test is administered more often due to the New Student Orientation.

On July 1, 2010, CLEP will launch two new exams: **College Composition** and **College Composition Modular (CCM)**. The two new exams will replace three current composition exams: English Composition, English Composition with Essay and Freshman College Composition. These three exams will retire on June 30, 2010.

- English Composition with Essay will be replaced by College Composition
- English Composition will be replaced by College Composition Modular.
- Freshman College Composition will be replaced by College Composition Modular.

Both of the new examinations will assess writing skills taught in most first-year college composition courses.

College Composition includes multiple-choice items and two mandatory essays scored by CLEP. College English faculty from throughout the country score the essays via an online scoring system.

College Composition Modular (CCM) includes a multiple-choice section that may be supplemented either with an essay section provided by CLEP and scored by the college, or an essay section provided and scored by the college. This exam is intended for colleges that want a valid, reliable multiple-choice assessment and greater local control over the direct writing assessment.

The **CCM** exam will include a 90-minute multiple-choice section on computer that may be supplemented either with a 70-minute written essay section provided by CLEP and scored by the University, or a written essay section provided and scored by the college. The written essay provided by CLEP will need to be ordered in advance and will continue to cost $10.

The optional essay section for **CCM** requires students to respond to two mandatory essay topics. Students have 30 minutes to complete the first essay which is based on the student's own reading, experience, or observations, and 40 minutes for the second essay, which requires the student to synthesize two sources that are provided.

Information regarding the two new tests was submitted to both the Registrar's Office and the English Department. After careful review of the new tests the faculty of the department decided that the University will not award any credit for the CCM test.

Benefits of the new exams

- **Currency:** New exams reflect current composition curriculum by emphasizing critical thinking, multiple writing modes and research skills assessment.
- **Flexibility:** The two exams offer a choice between convenient, centralized essay scoring or local control of essay scoring.
- **Continuity:** Correlation between the old and new exams streamlines policy decision-making.

College Composition and College Composition Modular include many elements of the three retiring examinations, with new essay prompts and question types.

Here are the steps that Testing Services has taken to help ensure that students are able to take advantage of your new policy as they plan their fall 2010 schedule.

- **University catalog is updated, website and any relevant materials to reflect the new CLEP College Composition policy.** The cut score required and the amount of credit the University will grant for College Composition and/or College Composition Modular are included.
- **Academic advisers are informed about the new CLEP College Composition policy. They are advised to** visit www.collegeboard.com/clepcomposition for more detailed information and also take a short self-paced tutorial about the exams.
- **Students are directed to the CLEP College Composition student information page** on the CLEP website.
- **Students are advised of the free downloadable study guide** on the student information page which became available in April.

CLEP exam fee will increase to $77 beginning July 1, 2010. The fee increase is shared with all staff and faculty responsible for advising students about CLEP, and Testing Services website is and publications are updated as well. College Board allows test centers to charge a nonrefundable administration fee for each exam. This fee is to basically reserve the computer for the student and is payable directly to the test center. This fee will increase from $20.00 to $25.00 as of July 1 as well.

Fees for veterans: Veterans must pay all CLEP examination fees in advance. They may claim reimbursement for CLEP exam and administration fees under provisions of the Veterans Benefits Improvement Act of 2004. For more information about who is eligible for the CLEP benefit and how veterans can submit a claim, they are advised to visit the U.S. Department of Veterans Affairs testing page and the CLEP student page for veterans.

DANTES-funded candidates are required to pay the test center administration fee of $25.00 if they are taking the examination at the University. The administration fee, $77.00 is waived for

DANTES-funded candidates when they are testing at a college test center located on a military base.

Fees for DANTES-funded military candidates: CLEP examination fees are funded by the Defense Activity for Non-Traditional Education Support (DANTES). Examinations and optional essays are provided at no charge for all eligible military personnel and eligible civilian employees of the military.

Praxis – Later on this year, Educational Testing Service (ETS) will be implementing some important changes to computer-delivered testing for the Praxis testing program. Listed below are these changes:

- Five Praxis II Subject Assessments will be offered in computer-delivered format at the Prometric and ETS institutional test centers. The Computerized PPST tests will continue to be available as well.
- Online registration will be implemented for all of the Praxis computer-delivered tests.

The information below provides an introduction to these changes with regard to test center operations.

Praxis II: Elementary Education Tests

Two computer-delivered Elementary Education Tests will be introduced: Elementary Education: Content Knowledge, and Elementary Education: Curriculum Instruction and Assessment. Registration period begins in August 2010 and test delivery begins in October 2010. Testing will be available on a continuous basis (no fixed dates). Walk-in testing will not be allowed for this test. The test fee will be $120 for a three hour period.

Praxis II: World Languages Tests

The new Praxis World Languages Series includes three computer-delivered tests—Spanish, French and German—which measure the candidates' reading, writing, listening and speaking skills, as well as cultural knowledge. Registration period begins in August 2010 and test delivery begins in October 2010. The test fee will be $140 for a three and a hour period. Walk-in testing will not be allowed.

Fixed Testing Dates: There will be four testing windows each testing year. The first one will occur in mid-October 2010. Because the tests have a speaking section, other tests cannot be delivered in the same testing room while a Praxis World Language test session is in progress. To prevent scheduling of other appointments during the time set aside for Praxis World Language tests, Prometric will reserve blocks of time in test centers' schedulers on the World Language test dates. We will provide details about this process in a future communiqué.

Online Registration for Praxis Computer-Delivered Tests

Beginning in mid-August, examinees will be able to register online for all Praxis computer-delivered tests. The fees for the Computerized PPST tests will remain the same. The existing discount for scheduling two or three individual Computerized PPST tests during the same transaction will also be available in the online registration system. As before, candidates will still have the option to register by calling Prometric Candidate Services or the test center.
The Praxis client practice document will be updated in August.

ISO-Quality Testing, INC – Earlier this academic year Testing Services negotiated and entered a contractual relationship with IQT. The contract was read by the University's Legal Council's Office and was signed so that individuals from this area can test at the University. IQT pays Testing Services based upon hourly rates, in exchange for Testing Services making seats available and providing monitored conditions.

IQT had some basic requirements to allow Testing Services to start testing. One of the requirements was Pentium 3 computers (or higher), 128 MB RAM, IQT's Secure Browser program (provided), Internet Explorer 6 or higher, Internet access, FAX machine , Printer access, Secured room, Quiet (free of outside distractions), good lighting, spacing of three feet between each computer, comfortable seating, Clock, handicap accessibility, and accessible to restrooms and drinking fountain.

Below are some of the benefits of becoming an IQT preferred Testing Center:
Increase candidate testing volume and earn more revenue
Better employ test center's seat availability
User-friendly testing center web-based support system plus phone access to support staff
Full control to manage, modify, and enter available testing seats, test center hours, etc.
Candidates can register to take an examination at our center 24/7

IQT identified centers that are able and willing to administer a certification examination for sign language interpreters. These professionals provide critically important sign language interpretation so that deaf persons can participate equally in the community. A portion of this test is a performance-based examination that requires the candidate to provide interpretation from speech to American Sign Language and from American Sign Language to speech.

To administer this test, the candidate needs to be able to watch short video clips that are presented over the Internet and then respond using American Sign Language and/or speech. The candidate's response is captured using a computer video camera similar to that used for Skype or other video conference calls. A conference call type headset is used to provide the audio and record the spoken response.

Testing Services has agreed to administer the test. The company will provide the headset and video cameras. Testing Services will provide proctors and computers with an Internet connection sufficient to view videos similar to those seen on YouTube and other Internet sites. There is no special software required as the test is delivered over the Internet.

Diversity

Testing Services underwent multiple staff changes, and upgrades to address the office's increased responsibility and workload partly due to the implementation of the new student information system, ISIS in the last couple of years.

A. In compliance with the University's and the testing companies' polices, test supervisors and proctors are recruited, selected and trained in order to operate the center on a nondiscriminatory basis. To meet this responsibility, the Director of Testing Services

hires workforce as required and makes certain that they meet the qualifications given in the test administration manuals and that they reflect the same ethnic and gender ratios as the expected examinees.

B. Promote retention of international students by providing services in a congenial atmosphere that fosters relationships and a sense of community among the diverse population groups at UA. These include:

- Continue to facilitate accommodation of students with disabilities and administer tests based on their needs and the testing companies' approval.
- Assist in creating a diverse campus environment by establishing and maintaining ties with individuals internationally to assist with recruitment of international students to the University of Arkansas.
- Continue partnership with and support International and Graduate Admission Office to increase the number of graduate and undergraduate students from an underrepresented group such as Iranian students.
- Facilitate information exchange and enhance support by connecting new Iranian faculty/staff/students and their families with others in northwest Arkansas.
- Continue providing support to international students in the Spring International Language Center by providing general test preparation workshops.
- Promote retention of international students by providing services in a congenial atmosphere that fosters relationships and a sense of community among the diverse population groups at UA.
- Continue collaboration with all University offices regarding the diverse population and their needs, e.g., Center for Educational Access, Veterans Upward Bound, etc.
- Provide time for office staff to participate in multicultural events on campus or in the community regarding services provided to the diverse UA population.
- Maintain collaboration with Ozark Literacy Council by referring international student spouses to their ESL program.
- Attend National College Testing Association (NCTA) Conference in order to increase knowledge of how to properly administer tests to a diverse population.
- Assist in developing ties that boost the likelihood that prospective graduate and undergraduate applicants from Iran will enroll.
- Continue educating community members through responding positively to requests for presentations from students, faculty and various off-campus groups, e.g., Multicultural Center of NWA, Altrusa International of Fayetteville, NWACC, churches, public schools, etc.

Challenges and Barriers

SWINE FLU: Often the decision to modify a scheduling policy is not the vendor's call at all, but rather the decision of the client who has hired that vendor to deliver their test, and who has also set the rescheduling policies for their test. The client can refuse to modify the rescheduling policy and the vendor needs to carry that forward, and take the heat from their delivery partners

and the examinees. With the client most often shielded by the vendor's front line position, there is little motivation for a client to bring compassion to the consideration of a policy modification under H1N1 circumstances. As the vendor's delivery partner, Testing Services used University of Arkansas' policies and actions to elect to suspend test delivery under select H1N1 circumstances, and not face any contractual fallout with the vendor, providing the overriding University policy "required" the suspension. In the end, it's the examinees that have no alternatives, sandwiched between the client, the vendor and the college.

TEST ENVIRONMENT: Fundamentals of Engineering Exam was administered previously in Kimpel Hall where not enough desk space was provided during the exam. The National Board of Engineers reported complaints regarding the lack of desktop space while testing. The Director of Testing Services met with the Dean of Engineering to inquire what changes should be made. This entailed investigating and visiting different campus locations to find an appropriate facility. Testing now takes place in Engineering Hall.

AIR CONDITIONING INSTALLMENT: Testing Services strives to provide an excellent work environment for the Department's staff by providing a comfortable place to conduct business appropriately. After the recent renovations in February, the department was faced with a major problem when it came to the main office temperature. Several different avenues to remedy the situation were tried; however, none met the need.

After meetings and conference calls to the Facilities Management staff, an estimate was obtained for about $15,000. This is to install the outdoor unit on the rooftop, run the refrigerant lines through the roof and through each floor, install the indoor unit and connect the refrigerant lines. The work is supposed to begin on or before the beginning of Fall 2010.

WEBSITE MANAGEMENT: Constant updates to the testing schedule/calendar and other necessary changes are time consuming and need someone with great attention to details. It requires someone who knows the ins-and-outs of developing and maintaining a website. Even those who are experts in other computer related fields sometimes discover managing and setting up a website to be challenging. **Due to Jacob London's diligence, updates are performed to the Testing Services' site on a regular basis.** He has helped identify the exact features Testing Services needs and not only redesigned the site to make it more compatible with the University's main website, but made it friendly to users. Jacob continues improving the site to assure students have the necessary information and updated content. This prevents the Department from relying on outside sources for these services.

LOSS OF TESTS/INCOME: The changes in the tests, formats and schedules impacted the testing volumes and associated revenue generated by these tests here at the University. **Testing Services established alternative sources of testing revenues to increase the office budget by acquiring new testing contracts. Three contracts were acquired, negotiated and signed throughout the year with different testing companies and testing for these new exams have either begun or will begin soon.**

Below is a list of tests lost this year:

- Advanced Composition Exemption Exam

- Math Placement Test
- Nursing Department Final Exams

EQUIPMENT AND OFFICE FURNITURE PURCHASES: Incremental technology resources needed to support the expected growth in volumes and services are in sum modest, particularly if planned for well in advance and acquired over time. Support for those needs should be consistent.

The overall approach to and support for the Testing Services should be sustained, allowing for continued growth and enhanced offerings over the next five years.

The CBT Center has testing stations that are very old and need to be replaced. During this academic year and as the office budget allowed, Testing Services has purchased new computers for the Computer-Based Test Center. Also, all CBT computers used for ETS tests had to be replaced this year. Once the purchase was made in December 2009, Prometric was contacted to complete the setup of the new equipment. With the purchase of new computers for the center, Testing Services will start administering MCAT again as these computers will meet the requirements for MCAT testing stations. The first MCAT administration is schedule for July 3rd with three students.

Modest testing volume decreases were witnessed with CLEP/ DANTES testing, and testing for external vendors. The reduction in test volumes for external vendor programs was the result of intentional Department decision to avoid marketing those programs. They do not generate revenue for the Department and divert available staffing from programs that serve the University directly as well as generate additional revenue for the Department.

Documented Need for Services:
The best evidence that the services provided by Testing Services Department are needed is the increase in tests delivered over the past five years.

Key Resources Specific to the Unit:
The key resources for the Testing Services Department are staff, space and technology.
Staff: Providing there is no significant change in the type of services demanded of the Department, it is expected that staffing for the foreseeable future can remain at the same level it has been for the past five years. Changes in external market demands and internal service needs can be accommodated through the management of the factors that impact staffing (hours of operation, staffing schedules and elective offerings).

Space:
With the addition of the CBT & GMAT Centers' additional computers, Testing Services has sufficient space to handle the testing demands for the foreseeable future. With appropriate test scheduling, peak volume periods and large group test administrations the centers can be utilized fully.

Technology:

The Department currently operates with thirty-two computers on a local area network separate from the University's main network. This is largely driven by the incompatibility of the five different test delivery systems in operation with the standard protocol maintained across the main University network.

Below is a conservative approach to outfitting for future increases in computerized test delivery:
2009-2010 Fall of 2009 – added 15 CBT computers
Need to add 22 more for CLEP and other internet-based exams before the end of the year.
2010-2011 Summer of 2010 – add 5 computers
2011-2012 Summer of 2011 – add 5 computers
With additional computers by the summer of 2011 (FY2012) more tests/students could be accommodated at the CBT Center

Future Risks and Opportunities

Risks:
If the University's financial or political conditions change significantly, and either the Department's resources are reduced or service offerings are demanded that are incompatible with the current resources, the ability to maintain the current level of recognized success could be jeopardized.

Considering the number of tests that have converted from paper based to computer-based platforms, it appears that current facilities would not meet the increased demand for computer-based testing. The Department should be pro-active to ensure needs of test takers are met. One measure already taken to meet this challenge was to inquire about the possibility of obtaining the space now being utilized by University Relations photography lab. This space is directly adjoining to our existing paper based testing room on the first floor of Hotz Hall. University Relations is preparing to move-out on or before Fall 2010. Students that have University deadlines and requirements for admission should be able to test on campus. This could bring about the challenge of providing adequate space and equipment in the future.

Opportunities:
The skill level of the staff (full time, permanent part time and per-diem) will enable the Department to maintain exemplary service while introducing new services to the University community, and increasing the support provided to the academic departments.
With effective management, the continued involvement of highly qualified staff, and the ongoing support from the University, the Testing Services Department will be able to maintain high quality service delivery and continue to expand service offerings, without increasing staffing levels or operating costs.

Customized test batteries have been added for the business and industry clients with notable success. The University is uniquely positioned to service the assessment needs within the northwest Arkansas regional business community, potentially expanding involvement with the community while increasing revenue. Taking advantage of this market opportunity will require a more formal and creative operational relationship between the Testing Services and the community.

Conclusions:
Overall, the growth and advancements made within Testing Services over the past five years have been consistently positive. The Department continues to receive accolades from within the University for the level and quality of services provided. Students are also strongly positive in their view of the office's services.

Staff are trained and motivated to view themselves as "college testing professionals" who are making significantly important contributions to the University and the faculty, staff and students with whom they interact. This has become both a motivation and reinforcement, drawing strong commitment and extraordinary effort and initiative from staff at all levels.

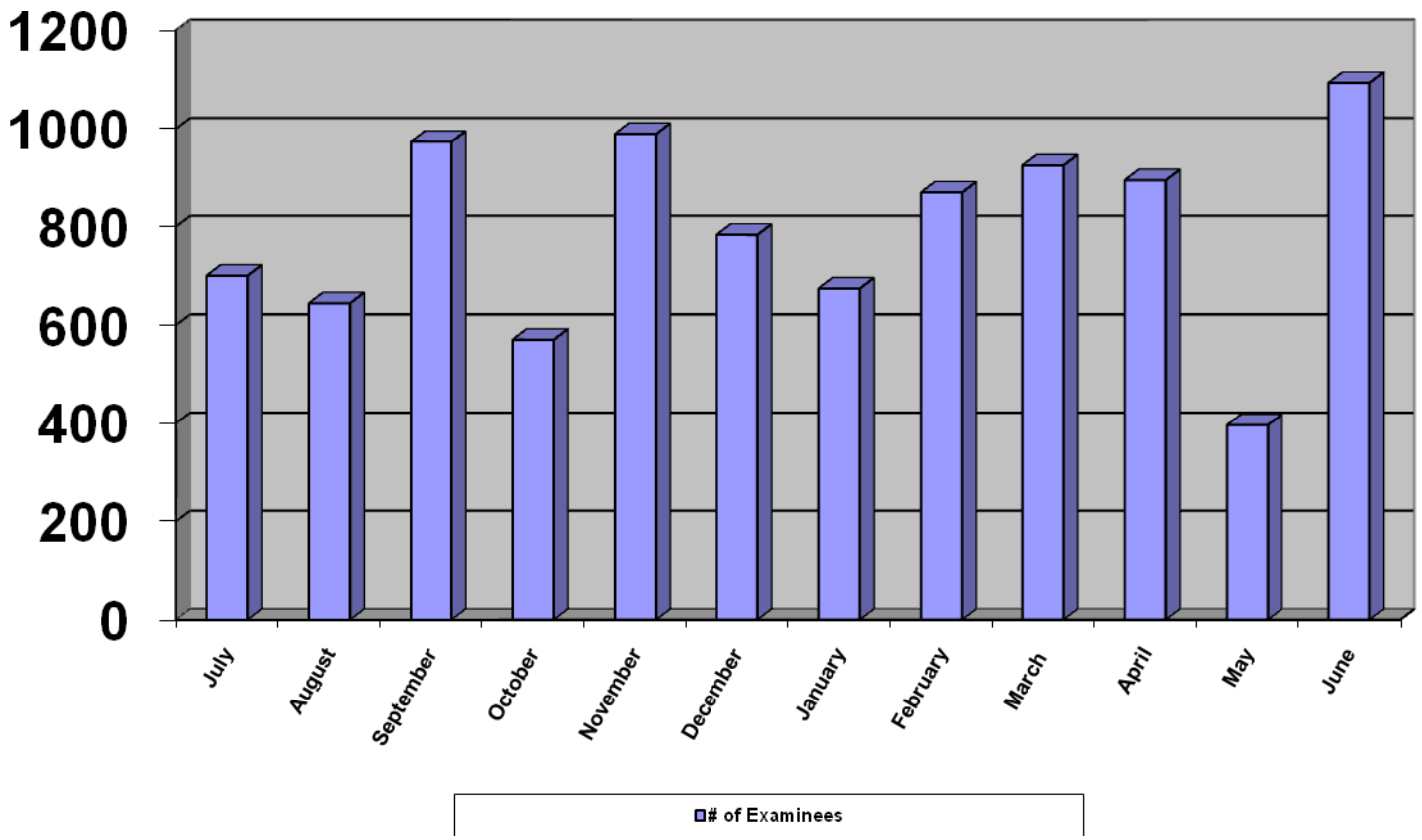
Appendix A

Testing Services is charged with the responsibility of administering standardized academic tests given at this institution. This office administers such academic tests as:

- American Board of Certification for Gastroenterology Nurses (**ABCGN**)*
- American Social Workers Licensing Examination (**ASWLE**)*
- ACT Assessment, national and residual versions
- Advanced Composition Exemption Exam
- Arkansas Journeyman and Master Electrician Exam*
- ASSET**
- Board of Certified Safety Professionals (BCSP)*
- California Council for Interior Design Certification (**CCIDC**)*
- CASTLE Worldwide Tests*
- Castle ACE-GFI Certified Trainer Exam*
- Certification Commission of the National Association of Medical Staff Services (**CCN-NAMMS**)*
- Certified Licensing Professional (**CLP**)*
- COMPASS*
- COMPASS Remote Testing for other campuses*
- College Level Exam Program (CLEP)*
- Defense Activity for Non-Traditional Education Support (DANTES) Defense Department Exams for College Credit
- DSST
- English Placement Test*
- English Language Placement Test (ELPT)
- Foreign Service Written Exam (FSWE)
- Fundamentals of Engineering (FE)
- Graduate Record Exam (GRE)*
- Graduate Record Exam (Subject)
- Graduate Management Admission Test (GMAT)*

- International English Language Testing System (IELTS)
- ISO Testing*
- Kryterion*
- Law School Admission Test (LSAT)
- Miller Analogies Test (MAT)*
- Multi-State Professional Responsibility Exam (MPRE)
- Math Placement Test (MPT)*
- Medical Admission Test (MCAT)*
- National Board of Professional Teaching Standards (NBPTS)*
- National Commission of Certified Crane Operators
- National Occupational Competency Testing Institute (NOCTI)*
- Nurse Examiner – Pediatric Sexual Assault*
- Nurse Practitioner – Women's Health Care*
- Oracle Certification Professional*
- Pharmacy College Admission Test (PCAT)
- PRAXIS I (Pre-Professional Skills Test or PPST)*
- PRAXIS II (national teachers' exam)
- Reading Placement Test*
- Remote Distance Learning Testing (exams from many colleges, domestic and overseas) paper-based and computer-based
- SLPT (Spoken Language Proficiency Test)
- Test of English as a Foreign Language (TOEFL)*
- Test of English for International Communication (TOEIC)
- Texas Educator Certification* (TEC)
- Walmart Certification for Storm Water Evaluator
- Writing Placement Test (WPT)*
- Individual test administration based on special needs (disabilities)
- Correspondence tests for students who need to complete assessments for another institution
- Exams for students receiving degrees from overseas institutions

Appendix B
2009-10 Number of Examinees Tested by Month



Appendix C

The assessment of students with disabilities has taken on considerable importance since the passing of the Americans with Disabilities Act (ADA) of 1990. Under ADA, a "disability is defined as (a) a physical or mental impairment that substantially limits one or more life activities, (b) a record of such an impairment, or (c) being regarded as having an impairment despite whether or not the impairment substantially limits major life activities." ADA requires that assessment of individuals with disabilities be performed with any reasonable accommodations being made.

Testing companies offer specialized administrations for examinees with common types of disabilities through test centers such as Testing Services here at the University. Depending on the disability, some accommodations permit continued administration in group settings; others require individual administration. For example, assessments may be available in enlarged print, Braille, and audiocassette versions for those with visual disabilities. In these cases, time limits can be enforced or extended by authorization given to the office from the testing companies.

Test takers may be given extra rest breaks, a reader, an amanuensis (a recorder), a sign language interpreter, allowance of a medical device in the testing room, convenient test taking locations and assessment times, distraction-free test environment, individual test administration, enlarged font on the PC monitor, and other accommodations as needed to meet the examinee's particular requirements. Accessibility to the testing site also needs to be considered.

The following special needs students were accommodated by Testing Services during the 2008-2009 Academic Year.

- Students with visual impairments
- Students with hearing impairments
- Students with learning disabilities
- Students with motor disabilities
- Students with emotional disabilities

Office of the Vice Provost for Research

Vice Provost for Research

Dean and Vice Provost Collis R. Geren continued to serve in FY2010 as the Vice Chair of the Arkansas EPSCoR Committee and as the head of the Arkansas Department of Defense EPSCoR (DEPSCoR) and Department of Energy EPSCoR efforts. He served on the Executive Committees of University of Arkansas Technology Development Foundation and the Mack Blackwell Transportation Center. Dr. Geren managed the interactions of the University's faculty with Van Scoyoc and Associates. Dr. Geren managed the fellowship programs of the Graduate School including the Benjamin Franklin Lever and those resulting from the Walton endowment. In FY 2010, the Vice Provost continued his service on the Board of the Arkansas Science and Technology Authority and the Board of the Arkansas Science, Technology, Engineering, and Mathematics (STEM) Coalition. Recently, he has been asked to serve on the Arkansas Discovery Network Board and as University of Arkansas representative to the Arkansas Research Alliance Research Officers Group.

Dr. Geren retired on June 30, 2010 as was awarded emeritus status in the following declaration by the Board of Trustees:

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ARKANSAS THAT

WHEREAS, Dr. Collis R. Geren, Professor of Chemistry & Biochemistry and Vice Provost for Research and Dean of the Graduate School, University of Arkansas, Fayetteville, has expressed his intention to retire from service to the University on June 30, 2010; and

WHEREAS, Dr. Geren joined the department of Chemistry & Biochemistry at the University of Arkansas in 1976 as an assistant professor, and was promoted to associate professor in 1979 and to professor in 1984; and

WHEREAS, he served as chair of the department of Chemistry & Biochemistry from 1987 to 1991, as well as interim chair of the department of Biological Sciences from 1990 to 1991; and

WHEREAS, Dr. Geren has served the Graduate School since 1991, first as Associate Vice Chancellor for Research and Dean of the Graduate School and now as Vice Provost for Research and Dean of the Graduate School; and

WHEREAS, during Dr. Geren's service as Vice Provost for Research, there has been a 93.52% increase in sponsored funding; and

WHEREAS, Dr. Geren has worked tirelessly on behalf of the welfare of all graduate students; and

WHEREAS, Dr. Geren is praised by his colleagues for his initiative and productivity, his great sense of responsibility to the University, and his spirit of cooperation; and

WHEREAS, Dr. Geren is a highly respected colleague who has brought distinction and honor to the University of Arkansas and is held in highest regard by his peers;

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ARKANSAS THAT the Board of Trustees expresses its appreciation to Dr. Geren for his contributions and service to the University of Arkansas, and expresses its heartfelt thanks to him for many years of service; and that the Board bestows upon Dr. Geren the title of Professor & Dean/Vice Provost Emeritus, effective July 1, 2010, and grants him certain rights and privileges as extended to emeritus faculty by the Fayetteville Campus and the University of Arkansas System.

FURTHERMORE, the Board directs that this resolution shall be spread upon the minutes of this meeting, and a copy shall be provided to Dr. Geren.

Associate Vice Provost for Research

Professor Dennis W. Brewer continued as Associate Vice Provost for Research as a half-time position during the academic year and full-time during the summer months. Dr. Brewer teaches one course each semester as part of his half-time position in the Department of Mathematical Sciences.

Dr. Brewer was responsible during FY10 for special initiatives and projects related to

- Facilitating the ongoing operation of the High Performance Computing Center
- Serving the Arkansas Space Grant Board and attending six meetings of the board in Little Rock, Arkansas
- Serving on the NASA EPSCoR Technical Advisory Committee and attending three meetings of the committee in Little Rock, Arkansas
- Representing (with Dr. Geren) the University of Arkansas on the NASA EPSCoR Space Grant Committee

- Serving on the Advisory Council for the Great Plains Network
- Introducing the Graduate Professional Learning Series at Graduate School Orientation
- Managing the university's response to funding solicitations which limit the number of proposal submitted by a single campus
- Nominating faculty for the Ralph Powe Award sponsored by Oak Ridge Associated Universities and the Pew Scholar Award
- Chairing an advisory committee for the Office of Research and Sponsored Programs
- Providing administrative support for the Research Council, especially as it relates to inquiries into cases of research misconduct (none were reported in FY10)
- Writing and obtaining approval for a new Research and Scholarly Misconduct Policy
- Assisting in the establishment of new research centers and maintaining accurate records of existing centers
- Organizing and conducting three workshops for graduate students on topics related to the responsible conduct of research
- Serving as co-principal investigator on a funded NSF Noyce Scholarship Program for prospective math and science teachers
- Generally facilitating and nurturing cross-campus research collaboration and funding competitiveness
- Managing information technology support for all units reporting to the Vice Provost for Research and Dean of the Graduate School
- Managing online education in the responsible conduct of research for graduate students
- Assisting faculty and students with software tools to detect plagiarism
- Serving as Graduate School representative to the University of Arkansas Sustainability Council.
- Serving on the Goldwater Scholar Nominee Selection Committee
- Serving on a committee to select the John A. White Student Research Collaboration Awards
- Serving on a US Department of Education review panel for awards to Hispanic-Serving Institutions
- Serving on a review panel for a proposal to the Department of Energy to implement a smart grid in Arkansas
- Serving on a selection committee for an architect and contractor for the renovation of Bud Walton Hall
- Serving on a selection committee for an architect and contractor for the renovation of Ozark Hall
- Serving on the NSF Graduate Fellowship Selection Panel, Washington, DC, February 4-6, 2010 (in a blizzard)
- Serving on a steering committee to prepare a proposal to the NSF ADVANCE program
- Attending the NSF EPSCoR state grant external advisory board meeting in Little Rock, Arkansas, June 3-4, 2010.

Assistant Vice Provost for Research - Finance and Administration

During fiscal year 2010, Ms. Gail G. Piha continued in her role as Assistant Vice Provost.

In the 2009-2010 year,

- Ms. Piha attended monthly college business/financial officer lunch meetings which are held to promote better communication between academic colleges and schools.
- Ms. Piha was placed in charge of the relocation of all staff from Dickson Street Annex and 106/12 Ozark Hall to either Stone House North or 105/106 Ozark Hall. Her major role was to serve as the liaison with Facilities Management on the needed renovations to Stone House North. Ms. Piha was responsible for communicating all renovation needs by our staff to Facilities Management on-site Construction Coordinator Warren Pingel. The actual offices were moved in stages, beginning on September 11, 2010, and concluding on September 15, 2010.
- Ms. Piha serves on the Graduate School's Staff Performance Evaluation committee. This committee was dissolved and staff employees were asked to nominate or volunteer. Gail serves on the new Associate Dean Staff Advisory Committee.
- The new Pay Plan for classified state was partially implemented at the University of Arkansas. All classified staff titles, grades, and position numbers were changed, and classified employees received a salary increase.
- Two classified staff positions at the Survey Research Center were eliminated. The last day for Fiscal Support Specialist Karen Gillow, who functioned as the Center's office manager/accountant, was September 30, 2009. Her duties and responsibilities were reassigned to Ms. Piha's position. After reviewing the duties with the Center staff, Ms. Gillow's duties were reassigned to Center staff, Ms. Erica Yeung and Ms. Piha in the Graduate School.
- Ms. Piha served as the United Way representative for all units reporting to the Dean of the Graduate School/Vice Provost for Research.
- Human Resources implemented a new system for posting open positions and for annual performance evaluations. So far, this is only being used for classified staff. Ms. Piha was responsible for identifying what access each staff member needed for both the hiring application and the evaluation component.
- Ms. Piha assisted in preparing the FY-2011 Budget Presentation which occurred in December 2009.
- Ms. Piha attended opportunities to meet candidates for the Dean of the Graduate School & International Education and candidates for the Vice Provost for Research & Economic Development.
- Ms. Piha began the FY-2011 Budget Cycle and completed it by the May 21, 2010 deadline.

During fiscal year 2010, Ms. Erica A. Yeung continued in her role in her new title of Fiscal Support Specialist.

- Ms. Erica Yeung provided all administrative and accounting support for Ms. Piha as well as for the Director of Graduate Fellowships, Ms. Vicky Hartwell. Ms. Yeung also managed the accounting for all sponsored students which involved the removal of class charges on sponsored students' account, ensuring that charges were posted correctly in BASIS and for generating invoices to sponsoring agencies.
- As part of the IT responsibilities, Ms. Yeung managed the IT Inventory and performed monthly checks ensuring that all backup systems were working.
- Ms. Yeung also handled all IT purchasing. A summary of FY10 IT expenditures is provided.

$ 3,405.00	accessories/miscellaneous
$ 4,658.46	hardware
$ 48,554.06	software
$ 9,586.57	toner

$ 66,204.09	Total

Survey Research Center

Significant Achievements and Changes in Fiscal Year 2009 to 2010

Projects

The projects completed and undertaken by the Survey Research Center (SRC) during fiscal year 2009 to 2010 (FY10) are listed in Table 1. The SRC engaged in 37 projects during the year. The staff completely administered 22 surveys during the year (59% of the projects) and wrote 16 reports for 43 percent of the projects. The SRC entered data as part of 8 percent of all the projects (n = 3), analyzed data as the focus of six projects (16% of all projects) and drew University sample for one University administrator's project and two students and their advisors. The SRC did preliminary work on four projects during FY10 and followed up on five projects.

Table 1 Projects Begun and/or Concluded in 2009 to 2010

Projects	Types of Investigators
Surveys	
University of Arkansas	
Statewide Political Survey	Faculty, University of Arkansas
Survey of Voters	Faculty, University of Arkansas
2010 Survey of Participants of a Health Conference	Faculty, University of Arkansas
Survey of Medical Personnel of a Military Medical Corps Worldwide	Faculty, University of Arkansas and a Professor of Accounting, Northern Illinois University
Evaluation of Participants in and Alumni of an REU (2007 - 2009)	Faculty and Chair, University of Arkansas
Evaluation of Participants in and Alumni of a re-funded REU (2010 - 2012)	Faculty and Chair, University of Arkansas
Survey of Alumni & Employers of an Engineering Department 2009	Chair of a Department, University of Arkansas
Survey of Alumni of an Engineering Department 2009	Chair of a Department, University of Arkansas
Survey of Alumni and Employers of an Engineering Department 2010	Chair & Faculty of a Department, University of Arkansas
Survey of Specific Curriculum in the United States	Faculty, University of Arkansas, External and Internal Funding
Attempting to Find a Feasible Way to Survey Alumni Regularly for Accreditation Purposes	Graduate School
Attempted Statewide Survey on Various Topics	

Projects	Types of Investigators
Non-profit Organizations	
Survey of Alumni of a Scholarship Provider in NW Arkansas	Nonprofit
Survey of Landowners Regarding a Water Management Project for a National Environmental Organization	Nonprofit
NWA Omnibus Survey 2010 on topics:	
Public transportation & support for a tax	Nonprofit – Transportation provider
Transportation	Nonprofit – Planning Organization
Death penalty	University of Arkansas Faculty
Water quality	Local water provider
Demand for a specific type of master's degree at University of Arkansas	University of Arkansas Department & Faculty
Consumer confidence & housing demand	Survey Research Center
Educational Institutions	
Study of Non-Returning and Resilient Local High School Students	Local High School and Alternative Learning Environment
Data Entry	
Data from an assessment of the holistic orientation of students	University of Arkansas Faculty
Data from one year's evaluation of teaching methods	University of Arkansas Faculty
Data Provision	
Selection of samples from the University of Arkansas population of students	Administrators from one University administrative unit
Data Warehouse	Two data selections
Data Analysis	
NWA Omnibus Survey 2009 on topics:	
Offerings of a public service medium	Jones Television of the Jones Center for Families
NWA Omnibus Survey 2010 on topics:	
Public transportation - Longitudinal data analysis and presentation	Non-profit
Death Penalty - Cross-sectional statistics	University of Arkansas Faculty
Demand for a specific type of master's degree at University of Arkansas - Cross-sectional statistics	Non-profit
Study of feedback in Landscape Architecture courses	University of Arkansas Faculty
Economic Constraints on Financial Affairs in Higher Education	University of Arkansas Administrator
Evaluation	

Projects	Types of Investigators
Evaluation of a literacy program in Benton County, 3rd year report	Two non-profits
Evaluation of a literacy program in Benton County, 4th year	Two non-profits
Evaluation of programs offered by a program to benefit Hispanic residents of NW Arkansas	Non-profit
Evaluation of a Website of Legal Information for Nonprofit Organizations - Maintenance only, 4th year	Non-profit and University of Arkansas Faculty
Evaluation of capacity of nonprofit leaders in NWA and their needs for additional capacity building, 2009	Non-profit
Evaluation of a training program for non-profit leaders, 4th year	Non-profit
Evaluation of a training program for non-profit leaders, 5th year	Non-profit
Trainers' evaluations of trainings for nonprofit leaders offered by a non-profit agency in 2010	Non-profit
Evaluation of projects to enhance preparedness for and success in elementary school , 3rd year report	Government – School
Evaluation of projects to enhance preparedness for and success in elementary school , 4th year report	Government – School

Effects of the SRC's Research Results

The research results generated via the SRC have been used to:

- Help understand roles of symbolic racism in state and national politics:
  - Ford, Pearl K., Angie Maxwell and Todd Shields. 2010. "What's the Matter With Arkansas?, Symbolic Racism and 2008 Presidential Candidate Support." *Presidential Studies Quarterly*.
  - Second article in preparation.
- Help understand Arkansas politics and policy development:
  - ***Readings in Arkansas Politics and Government,* Janine Parry and Richard Wang, co-editors. Fayetteville, AR: University of Arkansas Press, 2009.**
  - Jay Barth, Janine A. Parry, and Todd Shields. 2009. "The 2008 Presidential Election in Arkansas," in *Presidential Elections in the South*, Dubose Kapeluck, ed. (Fayetteville, AR: University of Arkansas Press).
- Explain the economy:
  - Roberts, Stacey. "Upbeat mood found in NW: Most in poll say they're hopeful." *Arkansas Democrat-Gazette*, 03 June 2010: 1D, 6D. Print.
  - Keys, Rob. "Survey Says Northwest Arkansas Optimistic About Economy." Arkansas Business (2010): Web. 20 Jul 2010.
- Contribute to faculty career development;
- Foster the mentoring of healthy students at the University of Arkansas;
- Inform citizens of Arkansas and the U.S. about the race between Senator Lincoln and her democratic opponents, and also informed citizens and policy makers about issues ranging from health care policy to beliefs about global warming;
- Inform Fayetteville Public School's administrators about voter preferences;

- Inform state health officials about factors related to community health in Arkansas;
- Contribute to an understanding of NW Arkansas residents' knowledge of and demand for transportation systems, water quality, a type of master's degree from the University of Arkansas, as well as opinions about the economy and policy issues;
- Provide information for a regional agency, which provides services throughout Benton and Washington County, to inform funders, board members, political leaders and the public about need for and funding for this service;
- Collect the data for a graduate student's thesis on high school athletes' adjustments to college and an undergraduate student's thesis on smoking among students;
- Help three departments at the University renew accreditation;
- Help three departments better understand their strengths and weaknesses and the career paths, thus, needs of their alumni;
- Convince funders of the importance of and success of funded programs e.g. evaluations of programs of non-profits funded by Care Foundation;
- Save PIs time in summarizing the highlights and opportunities for growth in their programs, e.g. NSF has re-funded the Research Experience for Undergraduates that the SRC has evaluated over the past three years;
- Help high school English programs across the country assess their variety and begin to standardize the curriculum;
- Provide sample so that students' health could be better measured;
- Help an athletics program at the University of Arkansas attract patrons and provide the type of services, including entertainment, that fans desire;
- Help a nonprofit provide their scholarships in an even more efficient manner than previously and attract more funding by demonstrating the effects of the scholarships they provide;
- Inform educators and policy makers at a national environmental protection nonprofit about the public's perception of the ecological impact of a large water project, the level of need for education related to the project and the demand for developing this project with concern for the ecosystem as well as the financial gains to be made;
- Help a foundation assess the effectiveness of its funding various community programs, and
- Help a variety of nonprofits determine the effectiveness of their programs.

Client Critiques of the SRC's Work

Clients of about 22 of the 55 completed projects from 2007 – 2008, 29 from 2008 – 2009 and 7 from 2009 – 2010 have evaluated the SRC. The small number evaluated in 2009 – 2010 reflects the staff shortages, but also the timing of the projects. For example, some of the 2008 – 2009 projects were evaluated in 2009 – 2010. Furthermore, it is onerous to evaluate every year when the service is somewhat repetitious and the initial evaluation is very positive. The evaluations are usually held with Dr. Koski and Dr. Longstreth or Noel Sharif after projects have finished. The evaluations are very positive overall. Some examples follow.

Advantages Cited by Clients (Similar Comments Are Grouped)

Telephone Surveys

- ❖ The director of the Arkansas Poll was very pleased with the way conduct of the 2009 Poll.

- "Everything worked well. They placed more demand on the Survey Research Center and the Survey Research Center did even better."
- They made many changes and the Survey Research Center was very adaptable.
- Dr. Parry originally asked for the data in a form other than SPSS, but by responding to one of Dr. Parry's requests within 12 minutes, Kim Gillow saved Dr. Parry hours.
- Drs. Parry and Schreckhise appreciate that the SRC keeps up-to-date on the cell phone literature and other advances in survey research because it has helped the Poll continue as the most accurate survey in the state.

❖ Dr. Parry was hesitant to ask the SRC to conduct the voter survey, but is glad she did and appreciated our great enthusiasm for it.
- SRC staff worked so effectively that she was unable to tell that the SRC had lost employees.

❖ Communication with the SRC works well.
- Emails were answered in a timely way by Kim Gillow and Molly Longstreth;
- The Survey Research Center kept her apprised regularly; and
- She is greeted professionally when she calls the Survey Research Center.

The evaluation of the SRC by the director of the UA Athletics study indicates that advantages of using the SRC include:

➢ Using a party outside athletic department was beneficial.
- Research that broad-based forces one to look outside athletics and gives different perspective which in turn forces them to reflect.
- SRC staff was good at asking and formulating questions as well as implementing them.
- Approach was professional and well organized.
  - This allowed the SRC to quantify the data better than the Athletics Department could have done and better enabled the SRC to give Athletics the information they thought they needed.
- The SRC helped them work within their budget, communicate well, and showed reciprocating patience.

➢ The survey's director gave the report to the marketing staff, and plans to review it again herself so that she can be sure she is able to provide what the fans had requested.

The National Wildlife Federation (NWF) staff evaluated the SRC on a telephone survey:

✦ NWF needed impartial information that would accurately reflect public knowledge and opinions about a large water project in Arkansas, and they appreciate the SRC staff's working hard with them to determine the objectivity of the questions. NWF's legal staff evaluated each question.

✦ The SRC and survey process benefitted greatly from the efforts that the SRC, but especially the NWF staff did to improve the accuracy of the survey sample.

✦ It was clear to both parties that hostility was a potential response, so the SRC worked closely with the NWF to develop a protocol that would protect from that to the extent possible.

✦ Even though it took much longer than planned to find accurate sample and to write the questionnaire so that it would obtain the knowledge desired, but in as objective a way as possible, the SRC worked with the process.

✦ SRC staff showed strong professionalism when obstacles were encountered. They very

much appreciated the quantity of level of thought that was applied to the project and professionalism under the substantial level of stress encountered in this project.
    - The fact that the FOIA was resolved without an implication reflected the care, accuracy and professionalism with which the work was conducted.
- ✦ The information provides that needed for developing an educational campaign.
    - Report highlighted the findings.

Face-to-face/Self-administered Surveys

- The SRC contributed strongly to the development of the questionnaire.
- Results received enabled this Extension Specialist decide the trainings.
- Post-workshop assessments were very positive.
- The report was accurate and revealed the growers' problems.

Web Surveys

- ➢ Client found the communication with SRC staff to be excellent, even when making adjustments to the survey or protocol.
    - Client was very happy with the report.
    - Plan to work with the SRC again in three years.
- ➢ Survey was done within the time needed.
    - Survey findings kept this taskforce on track.

Evaluations

- The evaluation gives them the overall picture because of the cross-sectional and longitudinal statistics.
    - It helps them continue funding and helps them plan because it shows where the plusses and the minuses are.
- The evaluation also gives feeling for the community in which the nonprofit operates as a whole.
    - This is especially important currently because the director is doing all the right things this year, yet the program is still very small. The lack of growth is partially explained by the description of the community.
- The SRC's reports and evaluations relieve the directors of much effort and helps make both of them better.
- In one evaluation, response rates increased among parents because Kim Gillow attended parent-conference night. At the same time, she interacted with the teachers and thus encouraged teachers to ask parents to respond to the survey.
- The school offered incentives to students for giving the survey to their parents, and this resulted in an increase in response rate.

Other Services

- Appreciated the analyses of the data and the way the interpretations were communicated.
- The speed of data entry and good management of data enabled these faculty to analyze the data within the tight deadline of submitting their article for presentation.
- The data management enabled the data analysis and was done quickly compared with the length of time it would have taken these faculty to have done the same thing.
- The SRC's analyses revealed other findings in the data that the faculty hadn't thought of

when developing objectives.

How the SRC Could Improve Its Services

- Should have built in more time in because it took longer than expected.
- Tried to ask too much in survey. Although the SRC was good at helping them limit the length of the survey, it was still too long.
- There were too many groups and too wide range of topics.
- The SRC collected fewer surveys than desired. Attendance was low and it was difficult to obtain responses, especially when adults have child care responsibilities.
    - The SRC was unable to reach the casual fans and non-fans and not necessarily just Razorback fans – a difficult task to accomplish.
- The challenge of attracting fans is complex and even the survey doesn't resolve the entire puzzle. What's the combination of winning and attendance that works?
- In one case the faculty member and SRC staff were so busy that communication went awry sometimes, but the client learned how to improve the communication on their end.
- Some questions were written somewhat ambiguously so need to be improved in future surveys.
- Out report legitimizes this nonprofit's project, therefore a sheet showing the financials would be helpful.
- Both the SRC and client could have worked faster in order to complete the sample.
    - SRC didn't realize the sample were available on the Web.
- Needs a glossary at the back of the data provided.

Progress on Goals Set for 2009 to 2010, Including Improvements Made

1) The top goal of the SRC is to serve the campus community, especially faculty.
    a) In 2009 – 2010, the SRC Director and Assistant Director introduced the SRC during new faculty orientation and graduate student orientation.
    b) Approximately 65 percent of the projects done by the SRC in 2009 – 2010 were conducted for faculty, graduate students, administrators, departments or Cooperative Extension specialists and/or agents from the University of Arkansas. At least 20 University faculty and two graduate students were involved in the 29 projects[4] on which the SRC worked this year. In addition, work was done for 3 University administrators, no Cooperative Extension specialists and/or administrators and three department chairs. Thus, a total of 33 faculty, graduate students, administrators, departments (department chairs), or Cooperative Extension specialists, program leaders, administrators or agents have been served. These University personnel and students reside in 24 departments or administrative units on campus.
2) Serve more graduate students
    a) As in 2008 – 2009, the SRC served two graduate students.
3) Operate within the constraints of recession
    a) The SRC took numerous cost containment measures including
        i) Laying off two positions,
        ii) Not attending conferences,

[4] Some projects contain more than one survey and some were begun last year, but the data were analyzed this year.

iii) Not replacing computers or other equipment, and
iv) Reducing student staff.

4) Continue the two omnibus surveys and how best to market them
   a) The NWA Omnibus Survey was conducted.
      i) The surveys offer University educators and administrators, government agencies and nonprofits excellent means for collecting data quite inexpensively.
      ii) They offer the SRC opportunities for publicity
      iii) In 2009 - 2010, the level of interest in NWA Omnibus was higher than in 2008 – 2009. Funds covered clients' costs, but not the SRC's. In selling the surveys, SRC staff spend hours contacting and re-contacting faculty, state agency administrators and nonprofit leaders and/or publicists and thus inform them that the SRC exists and what services it can offer. Two nonprofits, one quasi-governmental agency and two UA faculty participated.
   b) Arkansas Omnibus Survey
      i) Due to staff shortages, inadequate time existed to pursue the Arkansas Omnibus Survey adequately. Given the recession, this survey's priority was lowered.
   c) A new brochure for the omnibus surveys is nearly complete for FY11.
5) Seek new level of projects
   a) SRC continues to conduct more complicated and sophisticated projects each year. This year a national level project was continued from the previous year and legal issues increased the SRC's knowledge of how to deal with FOIA'd projects. Search for larger, more sophisticated projects will continue.
6) Personnel
   a) Part-time accounting position is needed, at least.
   b) SRC has depended upon an accountant from the Graduate School and needs that accounting assistance.
7) Update and organize website
   a) Slight progress was made.

Employees

The SRC committed to the University of Arkansas that it would contribute to the education of the University's students. All students, former students and/or community members are trained on the tasks on which they work. Training is on-going. Students and community members are encouraged to constantly develop their skills. Numbers and types of students and other hourly employees the SRC employed during academic year FY10 are listed in Table 2.

Table 2 Number and types of hourly employees during FY09 and FY10

	Regular Hourly Employees		Temporary Hourly Employees		Total
Semester/Year	Students	Community Members	Students	Community Members	
July 1, 2008 – June 30, 2009	12	2	54	25	93
July 1, 2009 – June 30, 2010	9	2	43	13	67

Appendix: Publications and Presentations 2008-2009

The compendium of publications and presentations by faculty members at the University of Arkansas is compiled as a separate volume and can be accessed from the Graduate School website.