

CNAS 2011 Annual Report

July 2012

Tammy Jahnke, Dean

The CNAS Strategic Plan and Goals document is updated each year but is driven by our vision, mission and shared values.

Vision - The College of Natural and Applied Sciences at Missouri State University seeks to be recognized regionally and nationally for teaching, scholarly productivity, professional and community service, and our outstanding students and alumni.

Mission - The College of Natural and Applied Sciences develops educated persons who, upon graduation, are prepared to make sound decisions relative to the natural and applied sciences and society and to be productive and successful in their careers – our commitment to public affairs. We are committed to excellence in teaching, research and scholarly activities, and community and professional service.

Shared Values - We value

- ❖ our students and their success;
- ❖ hands-on learning (applied and practical);
- ❖ academic rigor and critical thinking;
- ❖ faculty, staff and administrators;
- ❖ excellence in teaching, research and service;
- ❖ ethical behavior;
- ❖ our research endeavors;
- ❖ our community, alumni and friends; and
- ❖ continuous improvement.

The annual report is structured around a set of college goals which are tied to the university long range plan and annual goals. It is posted in full on our website - <http://www.cnas.missouristate.edu/4537.htm>.

Goals 2011-2012

- Access to Success
- Public Affairs
- Engaged Inquiry
- Partners for Progress
- Valuing and Supporting People
- Responsible Stewardship

CNAS - STEM Graduates

Fiscal Year		FY2008	FY2009	FY2010	FY2011	FY2012
Department	Student Level	Headcount	Headcount	Headcount	Headcount	
		Value	Value	Value	Value	Best Est
		520	559	612	455	
Agriculture		122	106	129	99	
	GR	9	5	9	12	
	UG	113	101	120	87	
Biology		98	113	140	130	
	GR	15	22	27	11	11
	UG	83	91	113	119	90
Chemistry		25	21	21	28	
	GR	4	7	2	7	8
	UG	21	14	19	21	30
Computer Science		19	14	30	17	
	GR	0	0	2	1	4
	UG	19	14	28	16	20
Fashion and Interior Design		100	130	107	0	
	GR	0	0	0	0	
	UG	100	130	107	0	
Geography, Geology, & Planning		40	45	48	70	
	GR	6	5	7	18	11
	UG	34	40	41	52	73
Hospitality & Restaurant Admin	UG	83	89	87	69	62
Mathematics		24	31	33	34	
	GR	2	3	6	8	5
	UG	22	28	27	26	30
Natural & App Sci/Sci & Engrng	GR	0	1	0	0	
Physics, Astronomy, & Mat Sci		9	9	17	8	
	GR	4	3	11	3	1
	UG	5	6	6	5	7
Total by COLUMNS		520	559	612	455	

**Graduates for engineering are not included in this table. They will be listed as UG within the college in future years. The FY12 best estimate for engineering is 15 – our first 15!*

CNAS - # of Majors

		Fall 2008	Fall 2009	Fall 2010	Fall 2011
Department	Student Level	Headcount	Headcount	Headcount	Headcount
		Value	Value	Value	Value
		2,497	2,554	2,355	2,055
Agriculture		405	404	419	0
Biology		614	671	662	662
	GR	45	47	46	60
	UG	569	624	616	602
Chemistry		155	180	209	224
	GR	17	16	18	25
	UG	138	164	191	199
Computer Science		158	150	152	179
	GR	2	4	7	7
	UG	156	146	145	172
Fashion and Interior Design		424	368	0	0
Geography, Geology, & Planning		190	207	249	274
	GR	35	31	45	42
	UG	155	176	204	232
Hospitality & Restaurant Admin	UG	249	214	228	253
Mathematics		176	175	189	196
	GR	21	24	30	26
	UG	155	151	159	170
Natural & App Sci/Sci & Engrng		34	99	140	163
	GR	0	0	0	0
	UG	34	99	140	163
Physics, Astronomy, & Mat Sci		92	86	104	104
	GR	15	13	11	13
	UG	77	73	93	91
		2,497	2,554	2,355	2,055

**All UG majors listed within “Natural & App Sci/Sci & Engrng” are the cooperative engineering program students.

Low Completer Programs to watch -

CNAS had two undergraduate programs that were declared “low completers” in 2010 - Geology (BS) and Physics (BS). The GGP department has recruited heavily over the past five years and the number of majors in geology has increased from 46 to 78. The number of graduates for FY08 through FY11 have all been ten or higher and one would expect that to increase with the number of majors. The PAMS department has included recruitment as a priority and the number of majors has increased from 77 to 91. The number of graduates has remained between 5-7 each year for the past five fiscal years. The department is working toward a goal of 10 graduates/year.

CNAS has four graduate programs that were declared “low completers” in 2010 – Chemistry, Geospatial Sciences, Mathematics and Materials Science. Chemistry has increased the number of masters students from 17 to 25 over the past four years. In addition they are working on retention and completion plans for all current students. The department has graduated seven and nine students each of the past fiscal years. Geospatial Sciences has increased the number of students in the program from 30-45 over the past few years. In addition they implemented completion plans for all current students. The department has graduated 18 and 14 students each of the past fiscal years. Mathematics has had 20-30 students in their graduate program each of the past four years. They worked very hard over the past year to develop a completion program for each student to improve retention and graduation rates. This appears to successful as the department has graduated 8 students each of the past two fiscal years. Materials Science has had a steady enrollment of 10-15 students in the program. They are working on the development of retention and completion plans for all current students. The program graduated three and five students the past fiscal years.

Although we monitor all programs (# of majors, retention rates, graduation rates, and # of graduates) we are paying close attention to physics (BS), mathematics (MS) and materials science (MS).

Scholarship Dollars awarded to CNAS students this year!

Department	Scholarships	Total Award Amounts
Biology	10	\$5,000
Chemistry	21	\$26,625
College of Natural and Applied Sciences	20	\$30,050
Computer Science	5	\$2,550
Geology, Geography, and Planning	9	\$4,950
Hospitality and Restaurant Administration	9	\$4,400
Mathematics	25	\$18,650
Physics, Astronomy, and Material Sciences	18	\$7,950
Total	117	\$100,175

** The above spreadsheet does not reflect the scholarships that we give to students for study away trips. We will try to get that information for next year.

Access to Success

- ✓ Recruit and welcome a more diverse student body (professional dev.)
 - ✓ OUCH Training for all department heads, dean, associate dean
 - ✓ MTH/CSC Faculty have also completed OUCH Training
 - ✓ CNAS Diversity Committee organized CNAS Connect Event 2/10/12 which was attended by 100 faculty/staff/graduate students as well as two other events
 - ✓ Graduate programs are more aggressively recruiting and monitoring student progress and all have developed plans to address low completion issues. A summary is above.
 - ✓ There will be a science living/learning community starting in fall of 2012.
 - ✓ HRA is partnering with COBA to offer an MBA with an HRA emphasis which starts in fall of 2012.
- ✓ Course Transformation projects to increase retention and student success. All transformation projects are assessing data this summer. Reports will be posted on our Blackboard site by September 1, 2012
 - ✓ MTH – College Algebra pilot courses taking place spring of 2012. Pilot combined 101/102 section in spring 2012. Progress being made.
 - ✓ AST114 icourse redesign will be complete for full implementation in summer of 2012
 - ✓ CHM105/106 online – course offered!
 - ✓ BIO102 – blended format piloted in summer of 2011 with full implementation in fall 2011 and spring 2012. Data analysis is underway.
 - ✓ CHM161/171 new labs – smooth transition, data to come
 - ✓ CHM107 – lab in a box experiment continues into 2012, starting in fall of 2012 students will have the choice of a “normal” lab or a lab in a box that they can do on their own.
 - ✓ CSC 130/131 is now using Python (computer language)
- ✓ Clearly articulated SLO and assessment plans - All departments have made significant progress in writing comprehensive assessment plans that include program mission/vision, clearly articulated student learning outcomes (SLO), curricular maps, and lists of direct/indirect assessments for each SLO. All departments assessed 4-6 SLO's in 2011. In 2011-2012 CNAS worked hard on undergraduate programs. In 2012-2013 we will put more attention on graduate programs. A college-wide Blackboard site is available to all faculty to review progress on plans.
- ✓ We increased the number of STEM graduates and we are working hard on retention efforts.
- ✓ Engineering Accreditation Visit a Success – Final decision/report in August
- ✓ HRA Accreditation Visit a Success – Final decision/report in August
- ✓ Departmental Advisory Board meetings a success at Homecoming!
- ✓ PharmD collaborations – a success

Public Affairs

- ✓ Study Away - Faculty led short term study away trips in 2011-2012

March 2011	Jamaica GRY	Linnea Iantria, Bob Pavlowsky
May/June 2011	Italy GRY	Linnea Iantria
May 2011	Jamaica BIO	Dan Beckman
August 2011	Ecuador BIO	Alexander Wait

Dec 2011/Jan 2012	Jamaica BIO (SP12)	Daniel Beckman
Dec 2011/Jan 2012	Ecuador BIO	Alexander Wait
Mar 2012	Jamaica GRY	Linnea Iantria, Bob Pavlowsky
May/Jun 2012	British Isles GLG	Tom Plymate
May/Jun 2012	Jamaica BIO (SU12)	Daniel Beckman
Aug 2012	Ecuador BIO/CHM	Janice Greene, Diann Thomas

Short Term Study Away – Yachana, Ecuador, Greece, Scotland, Italy

2009-2010 30 CNAS students participated out of 88 total at university
2010-2011 60 CNAS students participated out of 154 total at university
2011-2012 62 CNAS students participated out of 223 total at university

We take students on a number of domestic trips as well!

Study away by semester/year.

2009-2010 12 CNAS students participated out of 170 total at university
2010-2011 9 CNAS students participated out of 144 total at university
2011-2012 20 CNAS students participated out of 168 total at university

- ✓ Participation with the Tri-State Water Conference in November, 2011, ONE Conference in 2011, and Nanofrontiers Conference in October 2011
- ✓ Three workshops held at Bull Shoals Field Station in fall of 2011.
- ✓ 23 Project WET workshops were conducted around the state with 382 educators trained. Missouri State University provides statewide coordination.

Engaged Inquiry

Peer Reviewed publications/books/chapters/etc from the past four years. CNAS had 99 peer reviewed journal articles and the remainder was books/chapters. In addition there were many, many, many presentations by students and faculty in 2011. (And when someone can get Digital Measures programmed to easily provide a report on faculty/student presentations – I will add the data.) It is abundantly clear that CNAS faculty are a major contributor to the total number of peer reviewed publications for Missouri State University.

Year	2008	2009	2010	2011
	#Contributions	#Contributions	#Contributions	#Contributions
College	Value	Value	Value	Value
Agriculture, School of	11	12	7	8
Arts & Letters	78	77	76	58
Business Administration	47	47	57	57
Education	31	18	19	22
Health & Human Services	29	39	38	42
Humanities & Public Affairs	63	82	71	67
Library Science, Department of	1	0	1	2
Natural & Applied Sciences	89	91	95	107

- ✓ Biology recorded 39 internships in 2011, 64 undergraduate research projects and ten successfully defended graduate student theses in 2011!
- ✓ CNAS/HRA Undergraduate Research Day – April 13 with IDF on April 14, 37 undergraduate research posters for CNAS and 10 posters for HRA
- ✓ CNAS needs to work on faculty workload issues and will be near the top of our list of goals for coming year.
- ✓ The wet laboratory at Bull Shoals Field Station is complete and ready for researchers. Staffing has grown at the center with external funding. All renovations at Bull Shoals have been funded with external funding. The operations and station manager are funded by CNAS.
- ✓ CRPM continues to do great work for southwest Missouri. They provide planning resources to communities through contract work. Many students are involved with these projects. CRPM is totally self-funded except for the director and a geospatial scientist to help with mapping projects which are funded in GGP.
- ✓ OEWRI continues to fund several graduate students and is able to maintain staff with external funding. Currently OEWRI is partially funded through CNAS. The director is working on a plan to be self-funded within three years.
- ✓ Support faculty who mentor student research – Workload policies will be developed in the coming year.

- ✓ Our goal this year was to submit 100-120 external grant proposals in coming year including graduate students and faculty course buy-outs where appropriate. By May CNAS submitted 98 and our centers added another 39!!!

FY12 numbers through May of 2012

98 submitted by CNAS plus 11 from BSFS, 19 from CRPM and 9 from OEWRI

BIO – 22 (19 funded to date)

CHM – 13 (4 funded to date)

CSC – 3

Engineering – 1

GGP – 17 (9 funded to date)

MTH – 10 (4 funded to date)

PAMS – 16 (11 funded to date)

BSFS – 11 (11 funded to date)

CRPM – 19 (22 funded to date)

OEWRI – 9 (6 funded to date)

CNAS – 3 (1 funded to date)

- ✓ Support and mentor student research (undergraduate and graduate)

2011-2012	TOTAL # of GA's with assistantship	State Funded	Grant Funded	STEM Funded
MNAS	5	5		
Biology	34	20	11	3
Chemistry	17	15	1	1
Center for Resource Planning & Management	3		3	
Computer Science	2	1		1
Geography, Geology & Planning	20	9	9	2
Hospitality & Restaurant Administration	1	1		
Mathematics	13	12		1
Physics, Astronomy & Materials Science	11	8	2	1
TOTAL AWARDED	106	71	26	9
Total Awarded in 2010-2011	99	66	23	9

✓ Support and mentor student research/internships

Department	Undergrad internship headcount	Undergrad internship SCH	Undergrad research headcount	Undergrad research SCH	Grad internship headcount	Grad internship SCH	Grad research and thesis headcount	Grad research and thesis SCH
BIO Courses	399	399	498/499	498/499	796	796	798/799	798/799
BIO 2011 data	25	88	20	46	2	12	92	277
CHM Courses	397	397	399/499	399/499	796	796	798/799	798/799
CHM 2011 data	2	4		101	1	6	50	111
CSC Courses	399	399	596	596	796	796	798/799	798/799
CSC 2011 data	11	42	6	20	3	12	9	29
GGP courses	GLG399/GRY399/PLN599	GLG399/GRY399/PLN599	GLG499/GRY599/PLN596	GLG499/GRY599/PLN596	GLG796/PLN699	GLG796/PLN699	GEO780/GLG798&799/PLN696GRY799	GEO780/GLG798&799/PLN696/GRY799
GGP 2011 data	2/4/11	3/13/42	12/0/1	30/0/1	1/0	3/0	31	104
HRA courses	499	499						
HRA 2011 data	55	354						
MTH courses			497	497	796	796	798/799	798/799
MTH 2011 data			24	24	0	0	27	77
PAMS courses			386/486	386/486	796	796	MAT&PHY799	MAT&PHY799
PAMS 2011 data			14	19	0	0	23	63

** This is the first time we have compiled a report like this. We are assessing its usefulness and if useful – we will look at five-ten years worth of data determine trends.

Partners for Progress

- ✓ PSM is approved!
 - Advisory Committee met March 26, 2012
 - Brochure and website are complete
 - Action plan developed and in progress.
- ✓ MNAS website has been redesigned and students are being monitored each semester.
- ✓ Math/Science competitions
 - Science Olympiad was a success this year with over 60 teams competing!
 - Pummill Relays is in April and attracts over 1500 students each year
 - Ozarks Regional Science Fair is in April.
 - TEAMS/JETS competition in March (physics and engineering)
- ✓ Internships – Companies visited in 2011 through May of 2012+ – 3M in Nevada, ANPAC, St. Louis Sportservice at Busch Stadium, Four Seasons Hotel in St. Louis, Midas Hospitality, Levy Restaurants in St. Louis, Scottrade Center in St. Louis, Destination St. Louis, Martiz Travel in Fenton, MO; Sysco Foods, Samson Resources in Tulsa, OK.
- ✓ Helping Nixa with STEM magnet school – NSF Proposal #1 submitted in January (not funded but some good reviews, will resubmit) and Proposal #2 was submitted in March
- ✓ CSC continues to work with Art & Design on game design course.
- ✓ Continue to work with JVIC on collaborations – Outstanding meeting with scientists of corporate partners on June 28 with a follow-up being planned in September/early October.
- ✓ Continue collaborations with National Park Service, US Fish & Wildlife Service and Biology.
- ✓ Society of Physics Students is building an exhibit for Discovery Center.
- ✓ Physics and SPS and Discovery Center are partnering to develop an outreach to SPS grade school with hands on science activities.
- ✓ Construction of new engineering space in Plaster Center for Free Enterprise is to be complete in Spring of 2013 with move in early summer of 2013. All classes will be offered in the new space in fall of 2013.
- ✓ HRA is offering dual credit courses at several high schools with significant enrollments.
- ✓ Most departments have advisory boards that meet at least annually – GGP, HRA, CHM, PAMS, CSC, BIO. In addition there is an advisory board for the PSM and for the cooperative engineering program.

Valuing and Supporting People

- ✓ CNAS established a new awards process for faculty and staff to recognize outstanding work. First awards given in May of 2012!!!
 - **Atwood Research and Teaching Award**
 - John Havel, Biology
 - **CNAS Excellence in Teaching Award Winners**
 - Mario Daoust, Geography, Geology and Planning
 - Melanie Grand, Hospitality and Restaurant Administration
 - Kyoungtae Kim, Biology
 - Day Ligon, Biology
 - Brian Weaver, Biology
 - Michelle Bowe, Biology
 - Brian High, Chemistry
 - Linnea Iantria, Geography, Geology and Planning
 - Jeff Parmelee, Biology
 - **CNAS Excellence in Service Award Winners**
 - Dan Crafts, Hospitality and Restaurant Administration
 - Doug Gouzie, Geography, Geology and Planning
 - Brian Greene, Biology

Janice Greene, Biology
Stephanie Hein, Hospitality and Restaurant Administration
Dimitri Ioannides, Geography, Geology and Planning
Gigi Saunders, Biology
Abbe Ehlers, Hospitality and Restaurant Administration
Kathy Hughes, Biology
Kathy Shade, Chemistry

○ **CNAS Excellence in Research Award Winners**

- Chris Barnhart, Biology
- Paul Durham, Biology
- Nick Gerasimchuk, Chemistry
- Kevin Mickus, Geography, Geology and Planning
- Xiaomin Qiu, Geography, Geology and Planning
- Mike Reed, Physics, Astronomy and Materials Science

○ **Faculty Excellence Awards—Student Nominated, Student Selected**

- Damon Bassett, Geography, Geology and Planning
- Dimitri Ioannides, Geography, Geology and Planning
- Laszlo Kovacs, Biology
- Day Ligon, Biology
- Mark Richter, Chemistry
- Kathy Shade, Chemistry

✓ Successful searches to date -

Faculty

2012 Xingping Sun, Associate Dean

2012 Dan Beckman, Associate Dean

2012 Paul Schweiger, Biology Assistant Professor, University of Wisconsin-Milwaukee

2012 Katye Fichter, Chemistry Assistant Professor, University of Cincinnati

2012 Matthew Siebert, Chemistry Assistant Professor, University of California-Davis

2012 Adam Harbaugh, Mathematics Assistant Professor, Texas A&M University

2012 William Bray, Mathematics Department Head and Professor, University of Missouri-Rolla

Staff

Sherry Jones, CNAS Administrative Assistant

Sarah Morrissey, Engineering Administrative Assistant

Rhy Norton, Biology Laboratory Supervisor

Lynda Jochims, CRPM Accounting Specialist

Samuel Mensah, PAMS Laboratory Supervisor

- ✓ 40% of all CNAS assistant professors are women. 40% of all CNAS assistant professors are from diverse groups. CNAS still has goals for instructors and staff.

Responsible Stewardship

- ✓ Sustainability Fair and goals for the future
- ✓ Sustainability minor proposed
- ✓ College Budget committee has met regularly.
- ✓ Space review has been complete. Data is being reviewed and analyzed. Much more work is needed. Reallocations will take place as vivarium is built and engineering moves out of Kemper Hall.

Excecutive SWOT Summary

CNAS met nearly all of our goals for 2011-2012 and we had a very productive year. A new action plan will be adopted for the coming year. We had one program review/accreditation visit for HRA. The report from the accrediting agency will be finalized later this month but space was a real issue and we are addressing that now. Computer Science and Planning have written self-studies for accreditation visits in 2012-2013. Computer Science has submitted their self-study and the Planning self-study must be submitted in September.

CNAS started a college awards process and made the first awards in May of 2012.

Strengths – Faculty/student research; excellence in teaching by many, many faculty; external funding (submissions are up, funding is steady); instrumentation and facilities; outstanding students; study away opportunities for students; newly renovated chemistry labs.

Weaknesses – most science teaching facilities remain dated; centers need to work toward being more self-funded; inadequate space for HRA; need for more research space in the sciences – especially if we are to increase the number of STEM graduates.

Opportunities – Interest at the federal and state level to increase the number of STEM graduates; external funding opportunities in the sciences; cooperation with JVIC; MNAS program; PSM program; all graduate programs in the college; continued focus on sustainability; new space for engineering. Vivarium – if binds come in within budget.

Threats – Declining state funding has decreased the number of tenure track/tenured faculty in the college which directly conflicts with the increasing student demand and the federal/state demands to increase STEM graduates. Lack of space for growth. Vivarium funding and having to redo everything for another bid process. Lack of recurring funding for service contracts on major instrumentation.