

# CALS STRATEGIC PLAN • 2005-2009



**College of  
Agriculture  
and  
Life Sciences**

**Roots  
of the  
Land  
Grant  
University**

THE UNIVERSITY OF ARIZONA.®

**SEPTEMBER 2005**

## Letter from the Dean

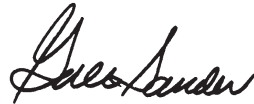
The University of Arizona's College of Agriculture and Life Sciences presents a new strategic plan for the calendar years 2005-2009.

This strategic plan differs from formats we have grown accustomed to in the university environment. Most plans have a considerable amount of reflection on how good we are, what we want to be, and a series of general goals followed by selected specific objectives. This approach works well in times where we can extrapolate trends and it serves partially as an operational plan by listing specific goals and objectives. But, it frequently misses the larger strategic issues because of the focus on specificity.

In this revised strategic plan we concluded that we cannot simply extrapolate trends. While there are some aspects of the future where we are relatively sure what might unfold, there are a number of other things that will only become clear as future events take place. We have therefore provided general guidance in a strategic sense, on where we are going, how we might get there, and what signposts we will use to measure our progress. We also included our subject areas of focus, our audiences, and which principles we should follow when making choices or assessing our progress.

We need to be continually alert to changes in the planning environment and to be quite flexible, agile, and adaptable in our ability to react appropriately for the times; however, we will not lose sight of our overall strategic directions. The university's goals are incorporated into this strategic plan and will be addressed in our detailed operational plans.

This plan outlines directions and goals for all portions of the college. We have changed some terminology; teaching is now learning, research is now discovery, and engagement is now extension and outreach. We have sharpened our focus and improved our abilities to anticipate change and assess our activities, including activities involving our major stakeholders. These changes will help us achieve our vision "To provide valuable learning experiences for our students and stimulate a richer and sustainable quality of life for people in Arizona, the nation and the world."



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## Executive Summary

The CALS strategic plan identifies areas where the college will focus and our relationship to the University of Arizona strategic plan. It is a strategic plan and therefore provides context and a roadmap for navigating what we see happening in the next 5 or so years. With the collaboration of our stakeholders we reviewed the major driving forces of change and their implications for CALS, and identified some near-certainties and uncertainties.

We will maintain traditional programs but the programmatic focus will change. Internal reallocation of resources will be an important financial tool in addition to funding by state appropriation or sponsored projects. We update annually a long-range budget plan, with the aid of our stakeholders, to continually reevaluate the resource distribution among our focus areas. We also expect that collaboration and partnerships will increase but so will competition. We expect market-based funding to increase if public support continues to remain low. We will maintain our leadership position in selected areas nationally and international and we will continue our efforts as a problem solver and educator for students and citizens of Arizona.

This plan includes context for anticipated changes and the rationale we will use to address those changes, as well as our assumptions and challenges and the methods we will use to assess our performance, which includes our living in a VUCA world — volatile, uncertain, complex, and ambiguous (a concept developed by U.S. Military). In our college we can address these factors by focusing activities and using the FAIR approach — flexible, agile, innovative, and responsive. The plan in brief is:

**Vision:** To provide valuable learning experiences for our students and stimulate a richer and sustainable quality of life for people in Arizona, the nation and the world.

**Mission:** To develop, integrate, extend, and apply knowledge.

**Values:**

1. Mutual Respect in a Diverse and Inclusive Community
2. Excellence
3. Innovation and Entrepreneurial Action
4. Integrity
5. Partnerships

### SIX FOCUS AREAS

1. Environment, Water, Land, and Natural Resources
2. Plant Systems
3. Animal Systems
4. Family, Youth, and Community
5. Human Nutrition, Health and Food Safety
6. Marketing, Trade, and Economics

The College of Agriculture and Life Sciences (CALs) administers a variety of programs on- and off-campus and engages in cooperative efforts with federal, state and county governments and others. The college includes 12 on-campus academic units, 14 centers or special facilities, 11 agricultural research centers and demonstration sites, and 22 Cooperative Extension offices in the 15 counties (including 6 offices on American Indian Reservations). The College of Agriculture and Life Sciences has:

- An organizational structure and program focus that supports its outreach mission as well as its teaching and research missions.
- A history of interdisciplinary approaches to both practical and theoretical problems which grows from a college with more diverse disciplines housed under a single administrative unit than any other academic unit on campus.
- A recognized commitment toward instruction and counseling or advising of students which is moderately well supported by scholarships for undergraduates. In addition, it has a strong supportive alumni group and a substantial grants and contracts funding base.
- Evidence of strong faculty and programs. A number of the programs and faculty are known and recognized both nationally and internationally.

Over the years we have changed various aspects of the college on a continuing basis. Our research areas and types of courses and our various audiences have changed. We are continually influenced by the needs defined by the external environment and budget availability, by shifts in the research agenda due to new discoveries or funding, and by new technologies. We expect these changes to continue but we are also facing a confluence of several changes at once that make the next 5 -10 years potentially stressful. Among the adjustments we will make are:

- Continuing our focusing in selected subject areas
- Increasing our efficiency and quality
- Creating new partnerships and collaborations
- Diversifying our funding base
- Continuing as a problem solver and educator for students and citizens of Arizona

These changes will have impacts on our faculty, staff, and traditional and new audiences, so we will develop a plan for helping everyone affiliated with the college to make this transition together.

This strategic plan identifies areas that the college will focus on and our relationship to the University of Arizona strategic plan and other planning efforts within the college. It is a strategic plan and therefore does not include details about specific goals and objectives, but leaves these to more operationally oriented plans. Rather, it provides a context and roadmap for navigating what we see as the intermediate-term future.

## **A Word About Our Land-Grant Status**

The Morrill Act of 1862 established the original “land grant” colleges (one college per state was developed from the sale of public lands and hence the reference to land grant). Subsequent legislation added the Agricultural Experiment Station (1887), the Cooperative Extension Service (1914), black colleges (1890), and tribal colleges (1994). The original purpose of the land grant colleges focused on the practical subjects (at that time) of agriculture, engineering, and home economics, but also included traditional academic programs and military training.

The Kellogg Commission on the Future of State and Land Grant Universities published several reports (1996-2001), with the last one titled “Renewing the Covenant: Learning, Discovery, and Engagement in a New Age and Different World”. In short, they recommended moving from the old teaching, research and service model that provided research and services focused on agriculture and mining to a model that addresses learning, discovering and engagement and that focuses on pressing educational, social, economic, scientific, and medical challenges of our times. Other studies have made similar conclusions. CALS has incorporated this new model and its principles into our values and guiding principles, our approach in applying this plan, and our terminology (teaching becomes learning, research becomes discovery, and extension becomes engagement). In addition, we will embrace the learner-centered education philosophy, where the learner is the key person, whether that learner is a student, a faculty member, or constituent. We will use these new terms in this report.

## Driving Forces of Change<sup>1</sup>

Driving forces are the clusters of trends that have major impacts on the future. While there are several groupings that can be defined, the five most significant for Arizonan universities over the next 15 years are:

### 1. DEMOGRAPHIC AND SOCIAL SHIFTS

The US population is both aging (the first baby boomers turn 65 in 2011) and growing in numbers of young. This causes the “dependency ratio” to increase (a smaller fraction of working age population to support the full population). In Arizona the segment with the greatest growth is the Hispanic population and the ages of most people moving into Arizona are the 20s and 30s (and their children). Events and trends in California greatly influence the population of Arizona, with large numbers of people moving between the two states. Arizona experiences a high in/out migration rate with other states as well, although the number of retirement age in-movers has a small reverse out-migration to their original states. This population increase due to in-migration, combined with immigrants from other countries, over time, impacts the culture of the once dominant population.

### 2. ECONOMY AND FUNDING SOURCES

The financial circumstances through the 2010-2020 period are difficult to forecast. The key factors are being set in place today: a higher population dependency ratio, increasing public and personal debts, debates on taxes available vs services provided, issues relating to income disparities, trade deficits, and costs relating to health care. Balancing public budgets represents difficult political choices but the consequences of high deficits or reducing existing entitlement costs also present difficult choices. How this situation will be resolved is not clear, but the impacts on Arizona’s universities will likely be felt in many areas (e.g., interest rates, inflation, available federal funds for research, affordability of college, university funding from the state and state Medicaid / AHCCCS costs). Universities are diversifying their funding sources as the state appropriation for higher education continues to decline as a percent of overall state spending.

### 3. TECHNOLOGY AND ITS USE

The three major types of technologies expected to make major impacts in the next decade or so are: 1) biotechnology and related biosciences, 2) materials, and 3) information technology. The internet (for most people) arrived in 1993, with the graphics web browser. It is just over 10 years since this occurred, and there has not only been tremendous growth in the connectivity and number of people using internet, but there are large sectors of the economy that have become dependent on it for their daily functions;

this includes universities. Technology (web, cell phones, and connections) in the last 10 years has dramatically changed the way society functions. Technology is beginning to make changes in the way learning is addressed by institutions and practiced by students; it will therefore have a large impact on universities over time.

#### 4. RESOURCES AND ENVIRONMENT

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Water supplies and quality have been recurring concerns, but because of the increased likelihood of climatic change and related weather uncertainty, there will be even more concern in the future. Alternative energy sources and energy efficiency efforts are expected to increase as oil prices rise due to declining reserves and increased demand. Transportation and urban growth (megacities in particular) represent challenges for moving goods and people rapidly and efficiently. These changes can be addressed but they represent a new way of dealing with our basic “infrastructure” and life support systems. Overall, the central question is how to affordably sustain our organizations, environment, and economy.

#### 5. HIGHER EDUCATION

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New ways of “connectivity” and decreasing state support as a portion of the university budgets have changed the landscape for education. These changes in funding patterns will continue but raise issues related to the public nature of a public institution. Since the development of the world wide web, an immense amount of information is available to anyone, anywhere, and at anytime. With mobile phones, email and blogs and other group communication methods, students can be in frequent contact with friends, study partners, project teams, mentors and professors. These changes, and others (e.g., cooperative efforts with private enterprise, K-12, community colleges, or other institutions), have the potential to transform how we think of education. Even with the inertia commonly associated with a university, we can expect significant changes in the types of things we do and in the way we do them over the next 15-20 years.

### Selected Arizona Issues Relevant to Our Planning Environment

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- State appropriations for higher education as a percent of state personal income peaked in the mid 1970s and have continued to fall (nationally and for Arizona).
- Environmental, water, and land use issues will have major impacts on the rural and urban landscapes. These issues include restoration activities for natural resource systems, water supplies and use, agricultural products, and needs of both the urban and rural areas.

- Limits to our land, water, and natural resource base will increasingly constrain and shape our growth and development opportunities. They will challenge our abilities to sustain our social and economic well-being and increase the efforts needed to protect and conserve our environment.
- Arid regions throughout the world will continue to view Arizona as a major source of information pertaining to management of agricultural and natural arid lands.
- Opportunities for increased interactions and relationships with Mexico and other border states will continue to exist. Similar options exist for American Indian Reservations with particular reference to their water availability for agriculture. Partnership opportunities exist with representatives of the relevant Arizona Governor's Strategic Partnership for Economic Development clusters and the Governor's Council on Innovation and Technology.
- Concerns about health and quality, quantity, type, and safety of food will continue as will safety issues related to the products of agricultural biotechnology.
- Communities will continue to struggle to provide adequate support for families and youth as the fundamental infrastructure fails to keep up with the rapid growth in population.
- Urban communities are growing most rapidly and can benefit from many CALS activities.

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## Basic Characteristics of the Future

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Certain characteristics emerge when trying to understand the future, regardless of the specific topics addressed. These five evolve from reviewing future trends and issues and will help shape many of our activities.

### 1. GLOBALIZATION AND REGIONALIZATION

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The world is more interdependent through the economy, trade, and marketing because of ease of access through travel or internet. While keeping national culture and local options, nations (or regions or cultures that are dispersed among many locations) become part of the world as a whole and thus require world-wide efforts at governance, treaties and collaborations.

### 2. INDIVIDUAL AND GROUP FOCUS

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Increasingly people will want both personal service (rather than generic relationships) and ways of obtaining products or services that are unique to the individual. At the same time, there is a need to work together to address common issues/problems; working together could be through small teams or collaboration with other organizations. This changes the relationship of the organization to the individual, as employee or as customer.

### 3. SUSTAINABILITY

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Sustainability is likely to be the next defining era (like technology defines our current era). It is pervasive through all driving force topics and is generally defined as doing something today with the long term perspective in mind so you are able to continue doing it a long time without burdening future generations. Topical examples include strategic planning, workforce development, life long learning, health, energy, water, security, infrastructure, resource management (including financial), structure building / maintenance, and organizational behavior (including ethics and quality).

### 4. COMPLEXITY AND SIMPLICITY

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Everything is getting more complex, with more choices, while people look for simplicity. Some solutions are indeed simple, and some new technologies can take the complexity and hide it, so the solution appears simple. Both simplicity and complexity are likely to be characteristics for the future.

### 5. NEW APPROACHES AND TOOLS

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There are many new possibilities for addressing all the driving force categories, and we have a new toolbox of devices to help do this, with many more tools and approaches yet to be discovered. Dealing with the unfamiliar is both exciting and worrisome and different people and institutions deal with the change in different ways. Conflicts in these different approaches to new possibilities will exist and need to be worked out. Often the solutions will be 'hybrids' where you have some of the older ways and some of the newer, each bringing its particular strengths to the solution.

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## Assumptions

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Our assumptions influence how we develop and implement the plan. For the benefit of the reader here are our assumptions.

#### 1. WE WILL MAINTAIN TRADITIONAL PROGRAMS BUT THE PROGRAMMATIC FOCUS WILL CHANGE.

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Production agriculture (plants and animals) will continue to be a viable component (although a declining percentage) of the state's economy. However, there will be an increasingly greater emphasis on other areas that may relate to agriculture but in new ways.

#### 2. LEARNING STYLES, PLACES LEARNING OCCURS, AND STUDENT EXPERIENCES WILL CHANGE HOW WE ORGANIZE THE LEARNING EXPERIENCES AND SUBJECTS.

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There will no longer be only a few places for "teaching" to occur (such as classrooms or laboratories). Rather, "learning" will take place in many locations (such as classrooms, learning centers, cafes, field exercises, informal

gatherings, and internet), and in many ways (such as lectures, independent study, collaboration, gaming, simulations, and debates). The term that describes this new learning is “blended”, using a combination of approaches, some existing and some new. Technology and connectivity have made some of these changes possible by allowing access by essentially everyone to very large data sets or specialized information at any location and at any time. The learner of tomorrow will have grown up with these changes in technology and will have more experience from a variety of learning styles than current students. We are in the process of transforming the importance of learning in one place to learning in a combination of places and approaches, and moving from teaching (focus on the teacher) to learning (focus on the student or researcher). The combination of new learning places and how students now learn will have a significant effect on how universities deal with the curriculum and the faculty.

### **3. CHANGING TIMES WILL REQUIRE INSTITUTIONAL FLEXIBILITY, INNOVATION, ADAPTABILITY AND DELIBERATE ADMINISTRATIVE EFFORT.**

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“Changing times” will involve new adaptive and flexible approaches in learning, discovery, and engagement/outreach that are able to accommodate advancing technology and opportunities for interdisciplinary cooperation. New technologies and student learning styles will cause changes in the way we design and deliver courses. The role of return on investment or the measures of progress may be changed from those used today to include relevant incentives to accomplish goals.

### **4. INTERNAL REALLOCATION OF RESOURCES WILL BE AN IMPORTANT FUNDING METHOD IN ADDITION TO NEW FUNDING BY STATE APPROPRIATION OR SPONSORED PROJECTS.**

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To effectively pursue selected areas of opportunity and strength will require appropriate resource expenditures. However, not all programs can be treated equally and external funds may be insufficient to focus selected areas. Accordingly, internal reallocations (based on appropriate evaluative methods) will be required. The college will become more focused on selected subject areas.

### **5. COLLABORATION AND PARTNERSHIPS WILL INCREASE BUT SO WILL COMPETITION.**

Cooperative Extension faces competition with commercial information sources and products of other universities and organizations. Research will become more competitive as formula funds change in favor of competitive grants and increased numbers of research oriented universities compete for these funds. Instruction competition comes partly from on-campus majors but also from e-learning opportunities (even though these courses may be a small portion of the student’s overall course load). Collaboration and partnerships will minimize the impacts of competition and also be necessary for managing needs with available resources.

## **6. MARKET-BASED CHANGES FOR OUR OPERATIONS WILL INCREASE AS PUBLIC SUPPORT REMAINS LOW.**

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Market activities are expected to play a larger role in student recruitment and retention, faculty salary sources (public as well as private funds for faculty and support personnel), and grants and contracts (to a greater payment for services). However, economic uncertainty requires that these changes be made with caution.

### **Near Certainties**

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These trends in Arizona are near certain. What is not known is what form the impacts will take.

- Increased diversity (especially Hispanics for Arizona).
- Aging and migrating populations.
- Infrastructure constraints become more evident (including transportation, energy, water, education).
- Financial impact of the national debt and trade deficits, demands of Medicare/Medicaid in 2010-2015 period.
- Collaboration, communication and working relationships among various groups become common.
- Technology and intelligent devices become pervasive, including their use in education.
- Increased competition for university resources (e.g., appropriated funds, research grants, high quality students).

### **Uncertainties**

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There are many uncertainties and we need to continually be flexible and alert to changes in the external environment. We need to plan for uncertainties and also be flexible and agile so we can respond to those that come on short notice.

Some include:

- Will sufficient funding be available (from all types of sources) to accomplish what we believe should be done? How will competition for these funds affect us?
- How will the growth rates of undergraduate and graduate student demand and the composition and preparation of the students be addressed by the Arizona universities and the State of Arizona?
- How will students learn in the future? Where will they get their education? How will the University of Arizona and CALS respond to possible changes in student needs and preferences and the affordability of higher education?

- Will the early indicators of significant cultural shifts and resource constraints (e.g., of water and energy availability at affordable prices, increasing diversity) disrupt the smooth functioning of society?
- How will concern over terrorism (physical, biological, electronic) impact our ability to function? How will regulatory responses impact us (e.g., foreign students and scientists and their travel constraints)?
- How will taxes vs services and private vs public good conflicts be resolved? How and when will the initial impacts of global climatic change occur?
- How quickly will the mix of various learning styles change (e.g., lecture, field trip, study abroad, e-learning, internships)?
- How will the Arizona Board of Regents study on restructuring the university system affect us (Spring 2005) and the new Phoenix Biomedical Campus of the Arizona University System impact the University of Arizona?

## — Implications of the External Environment for CALS —

The changes in the state's culture, resources, services, population and environment will have significant impacts on the universities and our college. We should anticipate change, take advantage of the new opportunities, and help our various audiences adjust to the new conditions. These changing times will require flexibility, agility, innovation, and responsiveness in our administrative structure and policies. Specific implications include:

- Modifications to curricula, programs, and degrees must occur in response to changes in employment opportunities, financial considerations, student interest, and societal needs.
- Relative audiences will change for all our traditional programs and existing approaches for learning, discovery, and engagement/outreach will need modification.
- Production agricultural activities will decrease on private lands and increase on American Indian Reservations. The use of agricultural biotechnology (including energy and pharmaceutical products from plants) will continue to increase. The increasing urban population will cause an increase of our efforts in urban problems and activities.
- Internal reallocation of funds and more market based, entrepreneurial funding will increase.
- Collaboration, partnerships, and alliances will increase within the campus, with other universities, and with private, public, and non-profit groups as sources for learning, discovery, and engagement/outreach programs.
- Obligations to provide lifelong educational opportunities will increase as Arizona adjusts to globalization and changes in diversity, information technology, and the work force.

- Learning technologies will become more integrated into e-learning opportunities which will be blended with the traditional teaching methods. The degree of blending will vary by discipline, type of class, and other factors.
- There will be a greater competition among universities for scarce resources (including state appropriations, federal support, and gifts and contracts).

## — Strategic Choices and Challenges —

Based on the planning environment, state and university studies on the roles of the universities in Arizona's economy, and the strengths and the changing audiences for CALS, we made the following strategic choices:

### 1. SIX FOCUS AREAS<sup>2</sup>

The six focus areas cross organizational boundaries and identify the priority areas for the planning period. They are related to the focused excellence emphasis identified by the University of Arizona and build on our strengths and the needs of our various audiences.

### 2. FIVE GOALS

The CALS goals are identical to those of the University of Arizona. Differences occur in the relative emphasis and approach that are required for college-level actions.

### 3. FIVE CHALLENGES

Accomplishing this plan will not be simple, as some significant redirections and change will occur. This represents challenges for our audiences as well as our faculty and staff. These challenges are the more important ones we will have to address.

## Six Focus Areas

At the broadest level, the college will be involved in learning (undergraduate and graduate), discovery (research), engagement (extension — off-campus education and applied research), and public service/outreach. Some activities cross all focus areas:

- *Programs involving an interdisciplinary or international scope* — where we cross borders of all types — International, Cultural, Ethnic and Disciplinary. Examples include the international border with Mexico, American Indian Reservations, the intersection of disciplines within the university, understanding and working with diversity of all types of cultures and peoples, and the outreach function of interacting with the communities and people of Arizona (and beyond).
- *Programs involving production agriculture* — Agriculture in this context includes plants and animals used for food or other commercial purposes. It also includes consumers as well as producers; everyone that eats food (and increasingly uses bio-pharmaceuticals or bio-energy resources), or uses fiber products, interacts with the production agriculture system. In addition, production agriculture includes environmental protection, marketing, and trade.
- *Programs involving the life sciences* — This area recognizes the changes in many of our activities that relate to plant and animal basic biology and genome structures and function, and the biology and engineering biosystems that deal with the development and use of products involving biology and genome activities.

The six focus areas described below serve as a college-wide framework to guide all administrative units in developing and directing their own programs. These focus areas are the basis for budget allocations and annual program reviews as well as a way to organize the blending of disciplines that are involved in a holistic approach to learning, discovery, and engagement, even as we specialize more. Frequently, an administrative unit will be involved in more than one focus area and in most areas there are formal and informal collaborations with other parts of the University of Arizona and outside agencies or groups. The number in parentheses after the title is the estimated percent effort the college has in each area (based on number of employees working in each area, regardless of funding source, in 2004), listed in order of decreasing involvement.

The University of Arizona has a strategy of “Focused Excellence”, where each college and the campus as a whole focus on key activities. The focused excellence process is undergoing development and is further described in endnote 2. The CALS contribution to focused excellence is the six focus areas described below.

## 1. ENVIRONMENT, WATER, LAND, AND NATURAL RESOURCES (32%)

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Is concerned with the issues related to protection, enhancement and sustainable use of our basic environmental resources of soil, air and water, and the conservation, management and use of renewable natural resources including wildlife, fisheries, rangelands, forests, watersheds, flora and fauna ecosystems, and other landscapes on lands in both private and public ownership. Emphasis on sustainable use of natural resources and environmental protection requires attention to public policy as well as resource assessment, monitoring and management. Approaches and solutions to environmental and natural resource issues seek to involve an integration of ecological principles in the design, planning, and implementation of the management of ecosystems and landscapes.



## 2. PLANT SYSTEMS (29%)

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Addresses the production and biology of plants used for food, fiber, livestock feed, industrial products, and for environmental, aesthetic, conservation and ornamental purposes. Optimal and sustained productivity is based on best cultural management practices, the molecular genetics of plants and an understanding of molecular, plant, microbe and insect interactions. Emphasis will continue on integrated pest management, use of high value/specialty plants, and unique conditions of arid environments.



## 3. ANIMAL SYSTEMS (13%)

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Encompasses contemporary methods of biology to improve productivity and increase the quality, composition, safety, and desirability of animal products; promote the use of integrated and long term, sustainable production systems that are compatible with arid environments; enhance genetic diversity and biological performance; and improve the health and well-being of food and companion animals.



#### 4. FAMILY, YOUTH, AND COMMUNITY (12%)

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Focuses on economic, social, psychological, and biological factors affecting individuals, families, and groups over their lifespan. The audiences include families broadly defined, Indian communities (on- and off- American Indian Reservations), and rural/urban and border living areas. Discovery (research) contributes to the knowledge and understanding of family processes and transitions, interpersonal relationships, and developmental pathways of children, adolescents, and adults. Educational and outreach programs target diverse youth, family, and community needs including such topics as effective parenting, violence prevention, resource management, responsible decision-making, the economic well-being of families and consumers in the marketplace, leadership, and access to community support systems.



#### 5. HUMAN NUTRITION, HEALTH AND FOOD SAFETY (9%)

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These programs focus on the relationships of the life sciences to human health promotion, disease prevention and food safety. Programs use innovative interdisciplinary approaches to discovering, translating, and applying how nutrition and physical activity can prevent disease and promote good health and well-being. The safety and quality of food for human consumption is addressed by programs directed towards transportation, processing and consumer handling of food. Programs encompass a broad range of approaches from basic cellular and molecular research to clinical human research studies and educational programs. These programs enable people and communities in the state, nation and other countries to translate research based life sciences discoveries into nutrition, physical activity and food safety practices that promote health and prevent diseases.



#### 6. MARKETING, TRADE, AND ECONOMICS (4%)

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Deals with economic analysis of natural resources including water, land, and the environment. It also contains the economic analysis and resource allocation processes of businesses, governments, and consumers. Also deals with the strategic analysis of the environments in which market participants operate—including competitive, consumer, economic, cultural, and technological environments—to create successful strategies and tactics in the global, value-added chain for food, fiber, services, and other consumer goods. The results of these efforts will impact on economic development, on the marketplace and the communities, on global trade and on natural resources and the environment.



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## Five Goals

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The five goals below are taken from the University of Arizona Strategic Plan for 2006-2010. The College of Agriculture and Life Sciences uses the same goals so we are consistent with the university, but implements them in different ways to address our strategic choices. Specific objectives are not part of this strategic plan, but will be found in more detailed and short term operational plans.

### **1. BUILD A WORLD-CLASS AND DIVERSE ACADEMIC COMMUNITY AT THE FOREFRONT OF DISCOVERY.**

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This includes high quality in faculty, undergraduate and graduate students, facilities, and support components like connectivity and information technology. It requires focusing on themes that allow excellence in selected areas but also providing a sufficiently broad range of subject areas that support the diverse needs of the modern student, the new economy, and an educated citizenry.

### **2. INCREASE STUDENT ENGAGEMENT, ACHIEVEMENT, RETENTION AND GRADUATION RATES.**

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This includes paying attention to student demographics (resident/non-resident/international, graduate/undergraduate, gender/ethnicity, and culture/views. It also requires a mix of curricular and programmatic options, financial aid, providing a broad education as well as workforce preparation, and a focus on learner-centered approaches of the 21<sup>st</sup> century.

### **3. EXTEND THE CONCEPT OF A “LAND-GRANT UNIVERSITY” TO POSITION THE UNIVERSITY OF ARIZONA, ACROSS ALL COLLEGES, AS A MODEL FOR LINKING SCHOLARSHIP AND CREATIVITY TO SOCIETAL AND COMMUNITY NEEDS.**

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This includes improving the quality of life throughout Arizona by addressing cultural, social, environmental, health, and economic concerns in both rural and urban areas. It includes collaboration with community groups, governments, K-12 and community college education, and for-profit entities as well as working with individuals and their communities.

### **4. ACHIEVE A STRONG FINANCIAL FOUNDATION.**

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This includes resources of all types with a focus on building a foundation that is sustainable. Examples include state and federal appropriated funding, student tuition<sup>7</sup>, research grants and contracts, and various types of resources that are developed through partnerships and collaboration.

## 5. INCREASE RECOGNITION AS A RESEARCH UNIVERSITY COMMITTED TO AN OUTSTANDING EDUCATIONAL EXPERIENCE AND CONNECTED TO ITS COMMUNITY AND THE WORLD.

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This includes basic and applied research for better learning experiences for students, state economic development, and adding to the collective need for research results for use by future generations. It also includes integration of research needs through interdisciplinary collaboration and partnerships with non-university groups. It especially focuses on specialized expertise for our southwestern area.

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## Five Challenges

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There are several challenges that apply to all our strategic choices and goals. These are:

### 1. RESPONDING TO ARIZONA'S UNIQUENESS, INFRASTRUCTURE NEEDS, AND FINANCIAL CONSTRAINTS

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- Arizona is in a unique position by size and growth rate where problems are sufficiently large to be identifiable but not so big that they cannot be solved. How can CALS be an asset to the state in the years ahead?
- Arizona is experiencing a changing agriculture and natural resources setting, population mix, environment, and community needs. The Indian communities have a significant amount of land, and, increasingly, Arizona's production agriculture and water. Diversity is increasing (including cultural, age, ethnic, economic, information sources, and political perspectives). The natural resource base has limits and vulnerabilities that will fundamentally shape the opportunities for developing our state. How we work with the various interests most effectively requires special efforts.
- Resources are limited and the education category is the largest non-entitlement section in the state budget, although the universities in particular are strong economic engines for the Arizona economy. How do we develop new sources of funding while retaining our "publicness" as part of our obligation to the state and our historic land-grant status?
- The arid southwest environment with multiple elevations and climatic zones, land ownership, and along an international border make the state unique. Solutions to issues applicable to other states may not apply here without modification or total revision.

***Implications for CALS:*** Our programs focus on international and national audiences in addition to those of Arizona, but we need to address and emphasize the uniqueness and the needs of Arizona in our activities. Because of declining state funding we plan to further diversify our funding base and become more entrepreneurial, but our

programs need to reflect the current and future needs of all residents of the state and not just support activities based on available non-public funds.

## 2. WORK JOINTLY WITH OTHERS BY BUILDING PARTNERSHIPS AND COLLABORATIONS

- We have a long history of working with other colleges within the University of Arizona and with other universities, with growers, businesses, non government organizations, and with governments at all levels.
- Fortify our existing partnerships and evaluate possible partnerships with other universities (including the Arizona Regents University e-learning opportunities) to augment our course offerings while making such arrangements seamless for our students relative to finding, enrolling, and transferring credits and grades.

*Implications for CALS:* We will develop new approaches to partnerships and coalitions. Some of these will be based on familiar experiences and some will have difficult initial negotiations as all concerned parties learn how to operate more with other partners.

## 3. FOCUSING OUR MAJOR EFFORTS IN SELECTED AREAS WHILE STILL COVERING THE BASICS

- The strategic choices in this plan identify our future focus as well as our basic efforts. How do we offer comprehensive programs and also focus in selected areas within available resources?
- When multiple disciplines are within a single college, the relative importance if each is difficult to judge because of the different needs of different subjects and their constituents. However, resource choices still have to be made.

*Implications for CALS:* We need to redefine excellence and focus carefully so that changes are made for the long-term good while with minimizing any short term transition concerns.

## 4. DEALING WITH CHANGE AND UNCERTAINTY WHILE WORKING WITH OUR STUDENTS, FACULTY, STAFF, AND AUDIENCES

- We anticipate we will be making some major changes in some of our programs and those changes will affect our students, faculty, staff, and our various audiences. There will also be some uncertainties, so we may not have a smooth trip as we navigate the unfolding future. However, we need to recognize the need to keep everyone informed and provide appropriate staff development and rationale for our changes.
- Recognize and reward excellence in learning, discovery, and engagement/outreach programs and match incentives with college goals and provide a working environment and culture that supports and fosters college activities.

*Implications for CALS: We need to provide a supportive work environment with adequate resources for optimum job performance and provide new technology and communication methods as a way of communicating with an increasingly sophisticated group of students, faculty, staff, and audiences.*

## 5. DISCOVERING AND APPLYING NEW APPLICATIONS OF NEW AND OLD TECHNOLOGIES

- The largest driver of change today is technology, and new technologies or new applications of existing technologies are continually occurring. How do we maintain our currency in these technologies while resources are constrained? How do we help people change their old habits when that is necessary to continually adapt to new ways of doing their daily lives?
- New technologies, particularly “smart technologies” will have impacts on all aspects of society; in the short term some of these may be or appear to be negative, but the overwhelming effects will be positive.

*Implications for CALS: We need to be near the leading edge of technology in our own activities and to anticipate those technologies that will best serve our various audiences.*

## About Our College

The CALS vision, mission, and values statements are very similar to those of the University of Arizona<sup>3</sup> (see footnotes 4-6). However, we have adjusted the UA terms to be more appropriate for CALS. The vision and mission are intended to be brief and clear, easy to remember, and to provide basic guidance for the future.

### Vision<sup>4</sup>

To provide valuable learning experiences for our students and stimulate a richer and sustainable quality of life for people in Arizona, the nation and the world.

### Mission<sup>5</sup>

To develop, integrate, extend, and apply knowledge.

### Values

## 1. MUTUAL RESPECT IN A DIVERSE AND INCLUSIVE COMMUNITY<sup>6</sup>

People are the source of our strength. Their different perspectives, backgrounds and experiences make us stronger. We treat people with respect and share decision making to create a climate that supports the success of all who learn and work here.

## 2. EXCELLENCE

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We hold to the highest standard in all we do and we invest our resources accordingly.

## 3. INNOVATION AND ENTREPRENEURIAL ACTION

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We commit to exploring new approaches, challenging the status quo, and fostering creative endeavor.

## 4. INTEGRITY

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We honor our commitments; take responsibility for our actions; are honest, fair and just in all we do; and stand ready to make informed decisions for the good of the community.

## 5. PARTNERSHIPS

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We create synergies and expand opportunities through collaborative and interdisciplinary approaches. As Arizona's land-grant university, we embrace the opportunity to connect with communities to share new knowledge to benefit Arizona and the world.

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## Audiences

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In addition to the more traditional focus on undergraduate and graduate students, the college reaches out to many other people interested in the benefits of learning to enhance careers, build businesses or improve life management skills. These audiences, our stakeholders, include:

- Agricultural industries and organizations
- Alumni
- American Indians and Hispanic groups
- Arizona citizens and citizens worldwide
- Associations and professional organizations
- Business, industry, and retailing
- Community leaders and elected officials
- Faculty and staff
- Government agencies
- Healthcare, health, and nutrition
- International and domestic geographical areas
- Medical agencies and groups
- Natural resource users, managers, and consumers
- Non-government organizations
- Parents, youth, and the elderly

- Public and private schools
- Research and educational institutions
- Students/prospective students

## Current Resource Sources

The college receives its funding from six primary sources (the number after the title is the percent funding for FY 05 except for grants and contracts which is FY 04), listed in order of decreasing involvement. For county funding, both funding and in-kind services are provided, which often include office space and telephones.

- Grants and contracts (about 84% of this is from federal sources, 42%)
- State funding (annual legislative appropriation, 32%)
- Local funds (gifts, product sales, scholarships, special construction, 18%)
- Federal formula funding (includes land-grant funding, 4%)
- Tuition (student fees, 3%)
- County funding (for Cooperative Extension, 1% plus in-kind services)

A portion of the budget for the college and county Cooperative Extension offices comes from the U.S. Department of Agriculture, via the Arizona Legislature (it passes through the legislature as part of the college appropriated budget). In addition, research funding is supplied by the USDA Cooperative State Research and Extension Education Service (CSREES). This partnership with USDA requires CALS research and cooperative extension efforts to operate through an annual Plan of Work, stakeholder inputs, annual reporting of activities through the Annual Report of Accomplishments and Results, specific impact reports (of research results), as well as individual reports of each cooperating faculty member's research effort, filing of Impact Statements on our program results, and working with other colleges of agriculture in a cooperative and sharing of information process. As we make some of the changes suggested in this plan, the relative resource emphasis will continue to shift to a greater number of grants and contracts and other new sources of funding.

## Special Characteristics of the College

There are some special activities and approaches by the college that makes it distinctive among the colleges at the University of Arizona, and we want to build on these for the future. They include:

- *Student advising and mentoring* — easy interaction with faculty and staff advisors
- *Broad student experiences* — classroom, field, laboratories, seminars, internships
- *Collaborations with others* — a variety of organization (e.g., agencies, businesses, farms and ranches, universities)

## — Accomplishing the Strategic Plan —

How do we integrate the focus areas into our administrative structure? One of the complexities of the future will be to make complex activities and interrelationships appear simple. We need to take general statements that can cross multiple departments and activities, and translate them to practical ways of implementing them. Each department will estimate (measured by employee responsibility) its role in each focus area, providing an overall estimate of the resource allocations among the focus areas. The process works in the reverse to see how to allocate resources to focus areas and then translate that to departmental budgets.

### Implementation Approach

The college will implement this plan by working at the college and unit levels, setting priorities, and using available resources to achieve the actions outlined in this document. CALS is organized along disciplinary departmental units and geographically oriented units. The six focus areas offer a way to address subjects that cross these disciplinary or geographic boundaries, so each of the focus areas are addressed by multiple units. Emphasis during this planning period will be placed on the six focus areas, which cross the departmental and geographic boundaries.

The overall context for implementing the plan will be looking at the VUCA world<sup>7</sup> and our FAIR approach to addressing it:

- VUCA World — Volatile, Uncertain, Complex, and Ambiguous
- FAIR Response — Flexible, Agile, Innovative, and Responsive

### Guiding Principles for Making Decisions

The overall planning and management process should be viewed as constantly evolving, with the objective of continuous improvement, using the CALS vision, mission, and values as well as the CALS best practices for governance<sup>8</sup> and the Kellogg Commission Seven Principles for Academic Reform (see Appendix A for details) for general operating guidance.

Seven Principles to Guide Academic Reform from the Kellogg Commission are:

1. A learning Community
2. Access and Opportunity
3. An Education of Value
4. Containing Costs
5. Accountability

6. Meeting New Needs
7. Flexibility and Responsiveness

The Six CALS Best Practices for Governance are:

1. Create an atmosphere that fosters trust
2. Develop a collaborative attitude and participatory decision process
3. Communicate Extensively
4. Encourage informed participation and training
5. Focus on effective and efficient processes and subjects
6. Allow for flexibility in shared governance structures.

The CALS vision, mission, and values also provide basic principles for making choices:

- Vision: To provide valuable learning experiences for our students and stimulate a richer and sustainable quality of life for people in Arizona, the nation and the world.
- Mission: To develop, integrate, extend, and apply knowledge.
- Values: 1) mutual respect in a diverse and inclusive community, 2) excellence, 3) innovation and entrepreneurial action, 4) integrity, and 5) partnerships.

Additional CALS Guiding Principles are:

- Review college Strategic Issues and Choices section of this plan for general guidance.
- Practice sustainable concepts in programs and operations.
- Communicate in a consistent, timely and appropriate manner to all stakeholders (faculty, staff, students, constituents, and the public).
- Organize and operate for flexibility, agility, innovation, responsiveness, and transparency in making and communicating decisions.
- Maintain a strong effort at continuing to serve the public good while still pursuing entrepreneurial activities and partnerships with others, on- and off-campus.
- Match intended behavior patterns with appropriate rewards and evaluation structures and processes.
- Participate in shared governance practices in leading and managing the college.

- Apply best practices as defined for appropriate areas (e.g., instruction, mentoring, staff and leadership development, shared governance, support services, communication, continuous improvement).

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## Assessment Criteria

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Formal periodic assessments will be conducted in concert with the University of Arizona academic program reviews, USDA Cooperative State Research, Education and Extension Service (CSREES) reviews, and the annual CALS departmental planning and resource reviews. The assessments will be used to determine resource allocations and priority setting among the six focus areas. Academic program assessments will also evaluate each unit in relation to a set of comparative institutions, and consider relative changes in the demand for its services in learning, discovery, and engagement/ outreach. In addition to these assessment methods, the college will obtain input on programs from advisory boards associated with county extension offices, agricultural centers and various academic departments. Periodic statewide surveys and stakeholder feedback sessions will be conducted to determine current needs, how well goals were accomplished, and program acceptance and impact.

Informal analyses will be completed in addition to the above formal assessments. These will be directed as specific programs and be based upon the following criteria (which are related to University of Arizona evaluation methods).

1. Relevance to college mission and strategic plan.
2. Undergraduate education needs and relevance of the curriculum.
3. Unique academic programs (including interdependence or duplication).
4. Extent of collaborative and cooperative efforts.
5. State needs or unique geographical emphasis.
6. Existing strengths and weaknesses.
7. Developments in new knowledge for the discipline.
8. Availability of space and other non-financial resources.
9. Possible impact of any changes as they relate to other units.
10. Student outcomes assessments results as affecting programmatic changes.

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## Performance Indicators

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Progress toward college goals will be measured by the performance indicators listed below. As conditions change, the specific indicators may also change.

1. Number and types of changes in learning, discovery, and engagement/outreach programs.
2. Number of partnerships and cooperative arrangements initiated, existing, and concluded.
3. Placement rate and positions for undergraduate and graduate students.
4. Number of awards and honors and leadership positions acquired by students, faculty and staff.
5. Stakeholder surveys and meetings for program value, impact, and quality.
6. Percent of students, faculty, and staff involved in mentoring and professional development.
7. Use of effective communication methods and their acceptance by stakeholders.

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### Returning to Our Roots: The Student Experience

[http://www.nasulgc.org/publications/Kellogg/Kellogg2000\\_StudentExp.pdf](http://www.nasulgc.org/publications/Kellogg/Kellogg2000_StudentExp.pdf) (page 35)

#### A STATEMENT OF PRINCIPLES TO GUIDE ACADEMIC REFORM

**Preamble.** This institution is committed to higher education as a public trust. It supports the state and land-grant ethic of service to students, communities, and states through teaching, research, and public service as a statement of that trust. In support of that commitment, this university and its stakeholders students, faculty, staff, administrators, board members, and friends consider the following principles to be major statements of the values guiding us as we enter the 21st century.

**I. A Learning Community.** This university defines itself as a learning community, one that supports and inspires academic growth and learning among faculty, staff, students, and learners of all kinds, on-campus and off. Learning serves all of them; and all of them serve learning. Oriented around learners' needs, this university is committed to maintaining a first-rate environment for learning.

**II. Access and Opportunity.** As one of the public colleges and universities responsible for granting two-thirds of all the bachelor's degrees awarded in the United States, this institution is dedicated to maintaining the widest possible access to the benefits of a college education.

**III. An Education of Value.** This university will provide graduates with an education that fits them with the skills, attitudes, and values required for success in life, citizenship, and work or further education.

**IV. Containing Costs.** This institution is dedicated to containing its costs.

**V. Accountability.** This institution is a prudent steward of public resources, conscious of the need to maintain and improve quality while containing costs. It will also investigate a variety of emerging mechanisms to assess the outcomes of the student experience.

**VI. Meeting New Needs.** As telecommunications and other technologies revolutionize American life and many non-traditional students seek access to this learning community, this university is committed to developing distancelearning techniques and extended evening and weekend offerings to meet the widest variety of student needs.

**VII. Flexibility and Responsiveness.** This institution is committed to developing new partnerships and collaborations and improving governance structures so that it can meet its teaching, research, and service obligations more effectively, work with its many stakeholders more efficiently, and respond to change and emerging needs more flexibly.

## Endnotes

<sup>1</sup> A more detailed discussion of the planning environment is in the CALS Strategic Planning Background Report (September 2004). It is at: <http://cals.arizona.edu/dean/calsstraplanbckgrnd.pdf>

<sup>2</sup> The University of Arizona focused excellence program is still evolving. This process was initially referred to as “large scale, theme-based strategic planning”; however, the university strategic plan for FY 2006-2010 refers to focused excellence but does not define the subject areas or themes. President Likins (October 24, 2003) defined focused excellence as: “Focused Excellence means that the UA will have programs of consistently high academic distinction. It also means that we fulfill our essential responsibilities to the residents of Arizona. ... The strategy of focus will necessarily mean the merging, restructuring and possible elimination of some programs.” Another perspective is that there will be no list of which units will be emphasized for focused excellence. This is because the term “focused excellence” is really a process with a lot of factors involved. Examples are: how we teach, how we invest in our infrastructure, how we engage the public and interact with the private sector, and how well we address inclusiveness. Focused excellence is not a discipline or department, but processes and activities. Therefore, new investments in units because of focused excellence are done because of a combination of factors. Focused Excellence is an evolving process to focus on what we do well and on special situations as a way of investing our limited funds most effectively; relevant factors are not yet completely defined. As this CALS plan was finalized, the evolving approach seems to be to have various themes that are cycled over time (emphasize a few for a few years, and then others), and have individual colleges develop their own themes/focus (which may or may not be related to the university themes/focus because of the disciplinary needs of the college). The six focus areas represent the CALS contribution to the University of Arizona Focused Excellence Process. More information about university focused excellence is at: <http://president.arizona.edu/initiatives/focused-excellence/>

<sup>3</sup> The University of Arizona Strategic Plan for 2006-2010 is at: <http://web.arizona.edu/~ipass>

<sup>4</sup> The University of Arizona vision is: “The University of Arizona: An exceptional learning environment, a place of possibility, a destination for the world’s best thinkers.” We selected our vision to be more reflective of our land-grant history and focused on how the college can be most useful for the state of Arizona (and the nation and the world).

<sup>5</sup> The University of Arizona mission is: “To discover, educate, serve, and inspire.”

<sup>6</sup> The University of Arizona value #1 (diverse and inclusive community) is slightly different. We added “mutual respect in” at the beginning of their term.

<sup>7</sup> VUCA was developed by the U.S. Military over several years. A brief description can be found from the National Defense University, Strategic Leadership and Decision Making: The Strategic Environment., no date. <http://www.au.af.mil/au/awc/awcgate/ndu/strat-ldr-dm/pt1ch2.html>

<sup>8</sup> College of Agriculture and Life Sciences Shared Governance Best Practices. <http://cals.arizona.edu/governance/bestpractices.html>



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Office of Research.....(520) 621-7201

Cooperative Extension .....(520) 621-7205

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To obtain further information on College programs see:

**[cals.arizona.edu](http://cals.arizona.edu)**

