From the Office of the Provost

The following is an update on ideas, issues and concerns relating to the proposal for the common core curriculum. It is anticipated that this update will become part of the continuing dialogue about this proposal within the campus community. Feedback can be sent to the Office for Undergraduate Education, Economics Bldg, Room 217, or through e-mail to Michael Gottfredson, Vice Provost for Undergraduate Education, at gottfred@ccit.arizona.edu.

PHASE II REPORT, NOVEMBER 1995

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At the University of Arizona, faculty members, students, administrators, and staff have embarked on a project to transform the University into a student-oriented research university. The first phase of this project, as reported last April in Lo Que Pasa, constructed a blueprint for this transformation, drawn from the conclusions of a number of working groups.

Substantial efforts have been mounted in the interim to build from the blueprint. This report highlights the results of these efforts, but it is also meant to continue the campus conversation about the need for a transformation in the undergraduate educational experience and the shape that it should take.

1. The Common Core

The first phase report detailed the intellectual and pragmatic considerations that argue for replacing the general education systems currently in place with a single University-wide
program. The current systems are constructed from a large menu of options in a wide range of fields, without enough attention to the coherence of the program of study, to the integration of knowledge, or to the relationship between basic skills and substantive knowledge. The systems also vary from college to college, with the consequence that students who begin in one college but later transfer to another cannot be assured that the courses they have taken will not have to be replaced with others.

While it would be incorrect at present to say that unanimous agreement has been reached about the shape of a University-wide general education program, a consensus is clearly emerging. For the purposes of this discussion it is useful to divide this segment of the undergraduate curricular experience into four subparts:

- **the First Tier of foundational study in three general areas:**
  - Natural Science,
  - Traditions and Cultures,
  - and Individuals and Societies;
- **the Second Tier of disciplinary-based coursework in three general areas:**
  - Natural Science, Arts and Humanities, and Individuals and Societies;
  - the Proficiencies -- Composition, Mathematics, and Second Languages; and
  - Area studies.
- **The First Tier**
  - During the summer of 1995, 60 faculty members from 7 colleges met regularly to develop guidelines for the First Tier and to construct sample pilot courses.
  - Faculty members were divided into three groups, corresponding to the three proposed segments of the First Tier, but there was broad agreement on overall structure. Each segment of the First Tier should include two three-unit courses, both of which should be broad, rigorous treatments of the fundamental knowledge and methods of inquiry within the segment.
  - While courses designated for the First Tier should be relatively small in number and constructed so that they may be taught by a number of faculty members, it is also critical that the structure that contains them is sensitive to the disciplinary diversity of the faculty members involved in teaching them.
  - Finally, writing must be an integral part of every First Tier course and should include multiple formats. (Exams, in-class, group work, ungraded exercises, journal-writing, laboratory reports and term papers are some possibilities.)
  - Broad agreement existed as well that the circumstances driving the current variability from college to college can be easily accommodated in the First Tier.
  - All undergraduates would be expected to complete the full complement of classes in Traditions and Cultures and in Individuals and Societies. Undergraduates majoring in Nursing, Molecular and Cellular Biology, Ecology and Evolutionary Biology, Animal Sciences, Plant Sciences, Entomology, Environmental Sciences, Nutritional Sciences, Wildlife & Fisheries Science, Soil & Water Science, Agricultural Education, Biochemistry, and Microbiology would be exempted from the biological sciences component of the Natural Science requirement; undergraduates majoring in Engineering, Physics, Chemistry, Astronomy, Atmospheric Sciences, and Geosciences would be exempted from the physical
sciences component of the Natural Science segment. Because First Tier courses are foundational, students would be expected to complete the First Tier by the end of four semesters of full-time study.

- Many students should be able to complete the First Tier in their first year of study, but the flexibility of the first two years accommodates the reality that some majors require significant prerequisite work at the beginning of a student's University education. A synopsis of the guidelines developed for each area by the summer groups is included here; a complete version is available through the Undergraduate Education homepage on the WorldWide Web (http://wacky.ccit.arizona.edu/~uge/ugehp.html) or in hardcopy at the Office of Undergraduate Education (Economics 217).

- **Traditions and Cultures:**
  - Tier One courses in Traditions and Cultures study historical development and fundamental concepts in European and other world cultures. Essential to all Tier One courses in Traditions and Cultures is an awareness that we, as historical beings, are shaped by the thoughts and actions of our predecessors and that we will influence the lives of those who follow us. Therefore, these courses examine cultures as distinct heritages of ideas, values, and artistic expressions and view them as having undergone continual adaptation due to social changes.
  - Courses in Tier One T&C must have a broad sweep both in terms of chronology (no less than an epoch) and in terms of geography (no less than a subcontinent). Courses must engage in a rigorous exploration of fundamental knowledge that emphasizes interdisciplinary and cross-cultural analysis and should teach critical thinking, emphasizing the assessment, evaluation, and critique of culture.

- **Individuals and Societies:**
  - Individuals and Societies Tier One courses introduce students to fundamental issues and concepts pertinent to the broad exploration of questions about human beings and their societies. Designed to foster independent, creative, and interactive learning, they provide students with opportunities to discuss course topics and material and emphasize critical, evaluative thinking. The I&S courses should inspire students to think about themselves, others, and social organizations in new insightful ways, instill in students a love of learning, excite them about the university experience, and leave them with valuable skills and knowledge applicable to their lives. These courses may focus on BOTH individuals AND societies, or on either.
  - Representative areas of study include, but are not limited to: basic human thought processes (e.g. conceptual systems, symbolic representation of the world, knowledge acquisition, judgment and decision-making, problem-solving); personal identity; group identity; family and kinship structure; religious, political, economic, and legal institutions; individual freedom and social control; ethical and moral principles; and ideas of social justice. This list is not meant to be exhaustive, and it is not expected that any single course will necessarily span all the areas above. Courses are, however, expected to avoid narrow parochialism.

- **Natural Sciences:**
  - The Natural Sciences segment involves a Physical Science and a Biological Science component. Central to both is the notion that science plays an important
role in the lives of all people. Tier One courses in the physical sciences must demonstrate the importance of physical and chemical processes and their application to events in the everyday world. Although course content must retain flexibility to be able to take advantage of disciplinary diversity, there should be some commonality among courses which satisfy this requirement. In particular, certain concepts in the physical sciences are of such central importance that they must be included in every Tier One Physical Science course offering. These required concepts are:

- Newton's laws governing force and motion
- Laws of thermodynamics governing energy and entropy
- The role of electromagnetism in nature
- The atomic structure of matter

The goal of Tier One courses in the biological sciences is to encourage students to think critically about the world around them, the processes leading to the evolution of diverse life forms, the interdependence of living systems, the importance of understanding and preserving the life around us, and the benefits of playing an active role in their own health and well-being. While course content must be flexible enough to take advantages of disciplinary diversity, some concepts are of such central importance that they must be included in every offering. These required concepts are:

- Living systems have evolved by natural selection.
- All life is made of cells.
- Properties of living systems can be explained in physical and chemical terms.
- Genes encode and transmit information between generations.
- Metabolism and photosynthesis provide energy.
- Cooperation and signaling between cells allow multicellularity.
- Developmental mechanisms are conserved.
- Plants and animals have common and distinctive physiologies.
- Genetics, environment, and behavior contribute to human diseases.
- The immune system protects against disease.
- Nutrition and lifestyle contribute to health.
- Applications of biotechnology are revolutionizing society.
- Ecosystems arise from interactions between organisms.
- Population growth is limited.
- Extinction is a fundamental biological process.
- Diversity in living systems is a resource.

The shape of the First Tier is somewhat different from that originally envisioned, where all students would share two courses in each of Traditions and Cultures, Individuals and Societies, and Natural Science. While it requires that courses in each segment be broad and foundational, the current structure would allow a selection of courses in each segment.

One beauty of the original vision was the idea that it is possible -- indeed, that it is essential in a very large institution -- to create for new students an intellectual community. The current vision acknowledges faculty members' concerns that
single monolithic courses might not draw on their strengths. However, it moves away from a structure driven by the desire to change the student experience.

- It is possible to simultaneously speak to the needs of our students and draw on our faculty strengths by expanding Courses in Common.
- Courses in Common allows 25-30 students to take three courses as a group -- under the current structure, a Composition course, a Mathematics course, and a General Education course. We could continue the current configuration, replacing a General Education course with a Tier One Course, while expanding the program to a larger proportion of our new freshmen. We could also reconfigure the collection of courses in Courses in Common to draw specifically from the First Tier.
- Whatever configuration is best, the instructors in a Courses in Common group could work together to integrate their course material and to provide for their students a single intellectual experience, recreating within the Core Curriculum the original vision.

**The Second Tier**

- The Second Tier has received much less attention, but its basic outlines are clear, following on decisions as to the character of the First Tier. Each segment of the Second Tier includes two classes. Both Second Tier courses in Natural Sciences and in Individuals and Societies build upon their corresponding First Tier Courses but may have a more particular disciplinary focus, perhaps drawing directly from courses introductory to a discipline. Arts and Humanities, the third segment in the Second Tier, includes courses in the Arts and Literature.
- In either case, because the Second Tier courses may be a student's terminal experience with the subject matter, these courses must not be narrowly focused but rather must build deepened appreciation for the general area.
- Like the First Tier, Second Tier courses should include significant writing in multiple formats and should not be tied to particular instructors, but should be constructed so that a number of faculty members could teach them. Second Tier Natural Sciences courses may include a laboratory component.
- All undergraduates would be expected to complete two of the three segments of the Second Tier, where the choice of exempted area is generally a function of the major the student has selected. For example, a student majoring in Astronomy or Planetary Sciences would be exempt from the Second Tier Natural Science requirement and a student majoring in Russian would be exempt from Second Tier Arts and Humanities. Students may complete the Second Tier at any point in their undergraduate career; however, because of the intellectual relationship between the First and Second Tiers, students must complete the corresponding First Tier segment before beginning the Second Tier.

**The Proficiencies**

- The expectations in regard to a second language have remained constant since the first phase report. Students would be tested at entry for that level of competence in language skills that can be reached by a motivated student of average academic aptitude in a well taught and articulated foreign language high school program of a minimum duration of two years; the specification of further language work would be left to individual departments and to colleges.
In contrast, the expectations in regard to mathematics and composition have been modified since the first phase report, based on the advice and recommendations of the faculty members most involved in their delivery.

Mathematics:

- All undergraduates would be expected to complete a mathematics course. Entry level student would choose one of three mathematics strands according to their interests and preparation.
- `G': Those students whose major requires general knowledge in mathematics only would take Mathematics in Modern Society (Mathematics 122). This is a topics course which naturally lends itself to the possibility of different sections according to the interests of different groups of students.
- `M': Those students whose major requires moderate knowledge in mathematics would take Finite Mathematics, Brief Calculus, or a statistics courses, where the choice is determined by the major selected. Students in this group would be expected to come from Architecture, BPA, or certain majors in SBS.
- `S': Those students whose major requires substantial knowledge of mathematics would take calculus. This group would be comprised largely of students in Engineering and Science.

Students would be expected to complete at least one course in Mathematics in their first year of study. For students in group G, this would end their instruction in university-level mathematics. Students in groups M and S would have the opportunity, if needed, to take a one semester course to complete their preparation for the required courses. Group M students could choose a 4-credit University Algebra course (Mathematics 121). Group S students could choose the precalculus course currently numbered Mathematics 120.

This organization has two major advantages to the current system, wherein general students are expected to complete College Algebra or higher and preparation for College Algebra is a separate University-level course. First, students in group G will be able to satisfy their general education requirement with a single three-credit course designed specifically to meet their needs. Second, students who need further preparation in group M will have the choice of a single algebra class.

In the close association between choice of mathematics option and choice of major, this organization also satisfies the desire of the first phase Skills Committee that there be a tighter integration of skills and content.

Composition:

Training our undergraduates in writing is not a responsibility that we can simply assign to First Year Composition; rather it is a responsibility shared with First Year Composition by all instructors in the First and Second Tier courses and by the faculty of a student's major department. Given this reality, a somewhat different approach to composition may be necessary than the one we have relied on for roughly the past decade. This possibility requires more extensive vetting than that accomplished by last year's Skills Committee. The issues include:
- the placement of freshmen in First Year Composition. Currently, students take a short, timed examination during Orientation. Other options, such as an entrance portfolio, may provide richer information about a student's writing abilities and achievements.

- moving students through the Composition sequence in different ways. Incoming freshmen now take at least two semesters of Composition; as many as 25% of incoming freshmen may place at a level that requires three semesters of Composition. The Composition Program has been exploring options that are sensitive to an individual student's development; other options are possible, including, based on portfolio assessment, the option that some first year students could place out of Composition. The possibility that students may have differential placement in composition depending on their writing expertise is a function of the development and continued strength of a writing component in Tier One and Tier Two courses, as well as in major courses.

- a more intimate link between First Year Composition and courses in the First Tier. This could be accomplished by linking the content of a section or sections of First Year Composition to a particular First Tier offering, so that the writing in the composition course would be based on material presented in the First Tier course. It could also be accomplished more directly, by subsuming composition courses within First Tier Courses. This option would involve expanding the number of hours associated with a First Tier course's discussion section -- say, from one to four -- devoting three of those hours to composition and writing instruction, but entirely within the context of the First Tier course. Other options may also be possible.

- the development of student writing portfolios. The benefits of the incorporation of writing portfolios in the undergraduate educational experience are becoming widely appreciated. Learning to write is a process, involving not only more and more complex topics, but also growing sophistication in the ability to command different writing styles and linguistic circumstances. A writing portfolio reflects the processual nature of this experience. It allows students not only to display their intellectual growth, as well as their developing skill in writing, but also to reflect and comment on these changes.

- the nature and necessity of a mid-career evaluation instrument. Undergraduates are currently required to take the Upper Division Writing Proficiency Examination after they have completed 56 units. Failure on this examination is supposed to be addressed in the student's major department. Student writing portfolios could make this instrument unnecessary, but even in the absence of the development of writing portfolios it is reasonable to consider whether the Examination accomplishes its intended ends.

- the further development of disciplinary-based writing centers. Some departments have begun to devote some of their resources to the
establishment of writing centers for their majors, locations where undergraduates can go for advice on writing assignments in major courses.

- **Area Studies**
- The first phase report mentioned the possibility that the undergraduate educational experience might include one or more of three different content areas -- the study of gender, race, class, or ethnicity; the study of a non-western civilization; and an international perspectives requirement. The addition of all three to the University-wide structure articulated above would expand the unit requirements beyond those that can be supported by many colleges. However, since all three proposals share the objective of expanding our students' intellectual experiences beyond that which is familiar, in preparation for living in a diverse environment, there is a way that they can be included. The choice of one of these three can be a mandatory part of all students' curriculum. Students can meet this requirement by designated courses within Tier One, Tier Two, or other College or major requirements.

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**A Proposal for the Common Core**

**Tier One**
- Traditions & Cultures 6 units
- Individuals & Societies 6 units
- Natural Sciences 6 units
  - 18 units (except certain majors)

**Tier Two**
- Arts & Humanities 6 units
- Individuals & Societies 6 units
- Natural Sciences 6 units
  - 12 units (choice of two segments)

**Area Study** 3 units (in Tier One, Tier Two, major or minor)

**Composition** 0-6 units (depending on placement)

**Mathematics** 3 or more units (depending on major)

**Second Language** 1 year proficiency at entrance (further study required in some majors)
  - 33 units MANDATORY MINIMUM FOR MOST MAJORS

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**Sample Application of the Common Core for Engineering Majors**
- Tier One 15 units (exemption in physical sciences)
- Tier Two 12 units (exemption in Natural Sciences)
- Area Study 3 units (in Tier One or Tier Two)
- Composition 0-6 units (depending on placement)
- Mathematics units determined by major
Second Language 1 year proficiency at entrance

27 units MANDATORY MINIMUM OF CORE CURRICULUM for Engineering Majors

2. Transfer Students and the Core Curriculum

- The Core Curriculum is a package designed for students who begin at the University as freshmen. But while roughly 4500 freshmen enter the University every year, another 3200 or so enter as transfer students. The first phase report recommended that students transferring from the state's community colleges who have completed the the Transfer General Education Core Curriculum (TGECC) will have met the University's general education requirements. (A copy of the TGECC is available through the Undergraduate Education homepage on the WorldWide Web (http://wacky.ccit.arizona.edu/~uge/ugehp.html) or in hardcopy at the Office of Undergraduate Education, the Office of Academic Services, or the Curriculum Office.) The first phase report also offered three options for transfer students who have not completed the TGECC. These options are under discussion with the state's Community Colleges.

3. The Instructional Environment

- Improvement of the instructional environment has proceeded on two fronts -- improving currently extant classrooms and creating new classrooms.
  - Renovation: While the quality of classroom space has been a high priority of the standing campus Space Committee, two special projects have received special attention. First, the University has pledged to spend over $1 million this year and the next to equip all centrally scheduled classrooms with basic equipment (tvs, vcrs, overhead projectors, etc.) and to upgrade some large lecture halls to new technology (video projection units, laser disc players, etc.) Second, the University has pledged to spend $10 million over the next five years to upgrade the quality of undergraduate classrooms. All existing classrooms have been studied, the faculty have been surveyed concerning needs, and rank-ordering of projects based on frequency of student use and level of needed renovations has been completed. A set of basic standards for classrooms has been established (focusing on the quality of instructional aids, comfort, lighting and acoustics) and the University is dedicated to bringing as many classrooms up to these modern standards as is financially feasible. All undergraduate classrooms were evaluated during the spring of 1995 and the first wave of renovations under the program is planned for the summer of 1996.
  - Creation: A first-year teaching building, designed to integrate classrooms, tutorial and advising services, and library resources, the Integrated Instructional Facility will employ the latest multi-media and high-technology instructional aids focused on the first-year experience.
    - Designed to be a `home-base' for first year students, the new facility will enhance the common experience of undergraduates, provide a home for the University's
general education courses, and serve as a visible and striking commitment of the University to undergraduate education.

- Classrooms in this building will be equipped with student computer stations and the building will include a large (300 station) information commons.

4. Faculty Development

- The full transformation of a large research university to a student-centered environment rests chiefly with the faculty. Professional preparation to be a faculty member has historically offered little or no instruction on how to teach or mentor students; nor has instructional development been widely offered after an individual becomes a member of the faculty.

- However, a major shift is underway at the University of Arizona, reflected in the efforts to provide opportunities for faculty members to expand teaching strategies, to explore alternative methodologies, and to focus on teaching issues in collaboration with colleagues. The efforts include the following:
  - Each of the Summer Core Curriculum groups was assigned a team of instructional resource staff (e.g. individuals from the library or from the Composition Board).
  - All new faculty were invited to an Instructional Resources Orientation during the week before classes started to introduce them to the services available to them and the offices that provide them.
  - The University Teaching Center has developed a program to teach faculty members how to integrate technology into an active learning environment.
  - Periodic faculty development symposiums are planned which focus on teaching strategies and the incorporation of technology into teaching.
  - A technology grants program has been developed to assist faculty in designing and implementing technological resources into courses. These collaborative efforts to focus on the teaching/learning process should help create a vital and dynamic learning environment in which the student is at the center.

5. Advising and Mentoring

- A number of programs have been created or refined to help students with educational planning.
  - `Finish in Four!' is a program designed to ensure that students who so desire can graduate in four years. The program specifies the University's obligations -- accurate and timely advising, course availability, and detailed, semester progress reports; it also outlines in detail the student's responsibilities -- timely registration, timely placement in correct courses, declaring a major, and maintaining an acceptable grade point average.
  - `OnCourse!' is a system to provide advising to students through automated progress reports. Academic Program Requirement Reports (APRRs) outline the University, College, and Major requirements for each program of study; APRRs are available through UAInfo and through departmental and college offices. Student Academic Progress Reports (SAPRs) specify the University's record of the student's progress in meeting those requirements. SAPRs will be mailed this fall to all students in the 1993 or subsequent Catalogs who have declared majors in Engineering, BPA, Agriculture, and Fine Arts, and will be available on-line thereafter.
Four-year Educational Calendars have been developed for all the majors in the Colleges of Fine Arts, Humanities, Science, and Social and Behavioral Sciences and distributed to new freshmen in these Colleges this fall. These documents will help guide educational planning, but they alone can neither meet students' need for academic advising and mentoring nor replace faculty advisors and mentors.

Three points in a student's University career deserve particular attention in this regard.

- Students are particularly vulnerable in their first year. Generally, at the University of Arizona, 25% of a freshmen cohort and 25% of a transfer cohort have left the University by the end of their first year.
- The first-year colloquium program, which puts senior, ranked faculty in small class settings with freshmen, is one effort to change the first year experience. These one-unit courses are designed to allow professors to describe their own fields of expertise, the opportunities that students selecting these fields might have for careers, and the research questions that currently engage the field.
- The number of first-year colloquia has increased from 30 in Fall 1994 to 65 in Fall 1995. But, if 50% of freshmen are to have an opportunity for such an experience, 125-150 a year must be offered. And we have yet to devise a comparable experience for transfer students.
- According to one study, roughly 85% of our students have a different major at exit than at entrance. Thus, it is clear that the first experiences in a major are also of critical importance.
- A number of departments have developed plans and strategies to improve major advising, including expanding e-mail and developing major newsletters. But some such plans remain to be implemented and other departments have yet to think through how they might improve early major advising. As a measure of this part of the undergraduate experience, the University has identified the percentage of our students reporting that they know one or more faculty members well enough to ask for a letter of recommendation. In 1994-95 69% of our students said they did; our goal is that 85% of our students will respond positively in 1997-98.
- Finally, students completing their undergraduate careers are at a transitional point in their lives. A capstone experience in the major lets qualified senior majors taste what continued study at the graduate level is like, an important consideration at a research institution. More generally, it encourages majors to synthesize what they have done in their undergraduate programs and to examine their work in a personally useful context.
  - Less than half of our undergraduate programs report capstone experiences; the University has committed to the creation of capstone experiences in all major programs by 1997-98.6.

Next Steps

- In order to continue the campus discussion of the core curriculum proposal, a number of steps are planned.
Working with the Committee of Eleven and the Undergraduate Council, Vice Provost Gottfredson is developing a proposal for the creation of a University General Education Committee. Although most colleges have a curricular body to determine the general education requirements for their students, this college-based structure has two inherent problems. It does not recognize the fact that the decisions of one college with respect to general education can have substantial implications for another, with respect to such things as class size and numbers of students; nor does it recognize the fact that the foundational course of study at the University is an interest of all faculty members.

The creation of the University General Education Committee will address these problems. The Committee will approve course and curriculum proposals for existing general education programs that affect the University and advise on their implications. Further, should the core curriculum be adopted, this Committee will be the faculty vehicle governing its implementation, including the development of guidelines for Tier Two and recommendations about the incorporation of Area Studies.

The guidelines developed during the summer of 1995 for the three segments of Tier One have been distributed to the College Deans and the Deans have been asked to discuss them with their department heads, with the aim of sharpening or improving the guidelines. Vice Provost Michael Gottfredson, Associate Vice Provost Susan Steele, or any of the chairs of the summer groups (William Grimes, Biochemistry; Paul Ivey, Art; Chris Maloney, Philosophy; Cary Nederman, Political Science; Lee Parry, Art; Randy Richardson, Geosciences; and Ron Terpening, French and Italian) are available to participate in these discussions.

Pilot courses constructed within these guidelines are planned for Spring 1996 and Fall 1996. (A list of the Spring 1996 pilots is provided on page 15 in the Spring Schedule of Classes.) Any faculty member interested in offering a pilot in Fall 1996 is invited to contact Vice Provost Michael Gottfredson (gottfred@ccit.arizona.edu or 621-8257) or Associate Vice Provost Susan Steele (steele@uge.arizona.edu or 621-8257) for information about how to proceed.

Working with the College of Humanities and the Composition Program, Vice Provost Gottfredson has planned the establishment of a group to investigate and develop the writing component of the core curriculum, including the role of First Year Composition. This group will include representation from the Intercollegiate Writing Committee, the College of Humanities, the Composition Board, the Composition Program, the Office of Undergraduate Education, the English Department, and the chairs of the summer curriculum project. Recommendations from this group are expected by the middle of the Spring semester.