Name of Proposed New Unit: College of Science and Engineering

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Current College of Science Units to be Reorganized/Consolidated:

Astronomy/Steward Observatory, Atmospheric Sciences/IAP, Biochemistry and Molecular Biophysics, Chemistry, Computer Science, Ecology and Evolutionary Biology, Geosciences, Laboratory of Tree-Ring Research, Mathematics, Molecular and Cellular Biology, Physics, Planetary Sciences/LPL, Speech, Language and Hearing Sciences.

Units from the Colleges of Engineering, Medicine and Social and Behavioral Science are also discussed.

Developed in consultation with:

College of Science Department Heads and Directors

Current Colleges to be Reorganized/Consolidated:

College of Science, College of Engineering, and College of Optical Sciences

In-depth discussion among these units is required.
College of Science and Engineering

The College of Science and Engineering would consist of the following academic programs. Independent white papers are being submitted for most of these programs. This new structure incorporates all departments currently existing in the three colleges.

School of Earth and Atmospheric Sciences as proposed by Karl Flessa. This unit would include the present departments of Geosciences, Atmospheric Sciences, Hydrology and Water Resources, Mining and Geological Engineering and the laboratories of Tree-Ring Research and Accelerator Mass Spectrometry.

School of Ecology and Evolutionary Biology as proposed by Rick Michod, but possibly modified as proposed by Jim Field from the Department of Chemical Engineering. (“Ecology and Evolutionary Biology” has considerable national and international brand recognition and thus should be retained in the name of the School.) This unit would include the present department of Ecology and Evolutionary Biology and possibly parts of the School of Renewable and Natural Resources and Chemical Engineering.

School of Chemistry and Biochemistry as proposed by Mark Smith. This unit would include the present departments of Chemistry and Biochemistry and Molecular Biophysics.

Department of Molecular, Cellular and Developmental Biology, as proposed by Kate Dixon. This unit would include the present departments of Molecular and Cellular Biology and Cell Biology and Anatomy.

School of Mathematical Sciences as proposed by Tom Kennedy. This unit would include the present department of Mathematics and the GIDPs in Statistics and Applied Mathematics, as well as the mathematics tutoring and transition services currently scattered across campus (University Learning Center, CATS Academics, MASTR).

School of Mind, Brain and Behavior as proposed by Elena Plante. This unit would include the present departments of Psychology, Speech, Language and Hearing Sciences, Neurobiology faculty existing in ARLDN, ARL Division of Neural Systems Memory and Aging, McKnight Brain Institute, and the GIDPs of Cognitive Science and Neuroscience.

School of Information Science, Technology and Arts as proposed by Paul Cohen. This unit would include the present departments of Cognitive Science, Computer Science, Management and Information Science, Electrical and Computer Engineering, GIDP in Statistics, Linguistics, Systems and Industrial Engineering, and participating faculty members from Sociology, Optical Sciences, and Ecology and Evolutionary Biology.

School of Physical Sciences as proposed by Peter Strittmatter and Chris Impey. This unit would include the present departments of Astronomy/Steward Observatory, Planetary Sciences/Lunar and Planetary Laboratory, Physics, Aerospace and Mechanical Engineering, and the College of Optical Sciences.
School of Optical Sciences
This unit would essentially mirror the present-day College of Optical Sciences minus much of the administrative overlay.

Biosphere 2 Institute
This unit could be the parallel structure to BIOS that deals with water and energy issues.

Department of Civil Engineering
This unit would most likely mirror its present-day structure.

Department of Material Sciences
This unit could conceivably move into a School of Chemical Sciences with the proposed Department of Chemistry and Biochemistry. At the moment, however, there is no proposal for this.

JUSTIFICATION
There is no doubt that the critical issues facing society today require a closer working relationship between engineers and scientists. Basic science informs engineering solutions faster than at any time before and one can imagine that engineers working closely with scientists could address many of the grand challenges that face humankind.

This very large re-organization would be almost unique and would set the stage for exciting opportunities that bridge science and engineering. It has the important potential to include novel undergraduate and graduate curricula as well as focused efforts to address national scientific and engineering issues. Many of the high visibility projects at the University of Arizona (i.e., Mirror Lab, Large Binocular Telescope and Phoenix Mission) have significant engineering components and a closer relationship between the appropriate departments in both Colleges, further focused under a School umbrella, could spark fascinating discussions and scientific programs. Furthermore, one can argue that the future is one where we will have to deal with multidisciplinary issues and that the curriculum we now have under the current departmental structure is antiquated.

A College of Science and Engineering would consolidate many of the various units that focus on the same discipline. For example, there are departments in both Colleges that focus on Earth, water and environmental issues. The same can be said for information technology, material sciences and space exploration.

The present day structure of three Colleges and many departments within the three Colleges does not allow for focused and continuous discussions on novel undergraduate curricula, grand challenges and workload efficiencies.

The schools proposed above would permit each discipline to create new undergraduate and graduate curricula that would be more modern and address many of the grand challenges in a more comprehensive way. In addition, the workload of the faculty could become such that it would allow for more time to focus on research while students benefited from a better education.

Furthermore, the consolidation of the three Colleges would allow for all these units to have a singular strategy for the future. The savings should be substantial since each College duplicates fundraising, student support, and administrative support.
The body of this white paper is necessarily brief because the proposals for the various schools, which are being submitted independently, are comprehensive and address such issues as teaching, service and scholarship, research, and creative activities, as well as ranking and reputation within their disciplines. Regarding the proposed merger of Science, Engineering and Optical Sciences, there is need for substantive conversations with these colleges that have not yet occurred in this accelerated time frame. This paper merely proposes the general umbrella under which science and engineering in general could prosper at our University. Independent of the proposed merger of the three colleges, I believe the Schools concept outlined above would be hugely effective in the College of Science alone if a college merger were not to occur. The University of Arizona is recognized for its innovation in teaching and research. We have created numerous programs that address disciplines that were developed here. This is an exciting opportunity to continue with this tradition of innovation.

PROCESS OF CONSULTATION
Considerable discussion has occurred with College of Science department heads/directors and faculty regarding the proposed schools. The individuals submitting the School proposals have in turn engaged their faculty, staff and students. The College has held two town halls open to all faculty, staff and students to both inform and solicit input.

POTENTIAL COST SAVINGS
The independently submitted white papers cumulatively address potential cost savings of approximately $2.25 million through mergers/reorganization.

Savings in consolidating the Deans’ administrative staffs of Science, Engineering and Optical Sciences could be approximately $1 million. The precise savings in all aspects of the consolidation of the three colleges would take a more serious analysis.