REPORT ON ARTICULATION, TRANSFER
And
SHARED COURSE NUMBERING

FOR ARIZONA PUBLIC POSTSECONDARY EDUCATION

Submitted to the Joint Legislative Budget Committee
By
The Arizona Board of Regents and the Arizona Community Colleges
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Highlights

The 2009-2010 academic year offered several advancements to Arizona's well-established transfer system.

Restructured Academic Program Articulation Steering Committee

APASC completed a major organizational restructuring in the Fall 2010 with a goal of increasing the numbers of students who transfer and receive baccalaureate degrees. The new organizational model addresses curricular alignment and communication between K-12 and higher education, as well as statewide coordination.

- The Consortium for Transfer and Alignment (ACTA), a new group within APASC, brings together representatives from all of the public higher education institutions, superintendents from for school districts, including a Joint Technical Education District, and the Arizona Department of Education.
- The new Joint Council of Presidents, a body comprised of all community college presidents/chancellors, the three university presidents and the president of ABOR, will provide oversight for APASC.

Number of AGEC Completers Continues to Rise

A study of Arizona's transfer system in 2007 found a direct correlation between the success of transfer students at the universities and the completion of the Arizona General Education Curriculum (AGEC) prior to transfer. Efforts to promote the AGEC are paying off.

- The number of students completing an AGEC at the community colleges has tripled since 2002.
- Students transferring to the universities with a transfer associated degree (embedded AGEC) have increased by 100 percent since 2004.
- Students with an AGEC or transfer associate degree are increasing percentage of transfer students who receive a baccalaureate degree.

Common equivalencies for International Baccalaureate and Advanced Placement Exam Scores

Efforts are underway among select faculty Articulation Task Forces (ATFs) to determine common equivalencies for International Baccalaureate (IB) and Advanced Placement (AP) exam scores. Although work was already underway, HB2725, passed during the 2010 legislative session, mandates the development of ". . . common equivalencies for specific levels of achievement on advanced placement examinations and international baccalaureate examinations . . . ."

Improved AZTransfer.com

AZTransfer.com, Arizona's website for transfer students, staff and the public, has been redesigned with changes implemented over the past two years. The 'hits' to the system rose from 11.9 million in 2007-08 to **26.1 million hits in 2009-10.** A portal for high schools students was added this past summer.

ABOR Policy for Transfer Student Admissions Strengthened

The Arizona Board of Regents revised its admission policy for transfer students based on data provided by the Arizona State System for Information on Student Transfer (ASSIST) regarding transfer student success (i.e., students who complete baccalaureate degrees) as a function of the number of hours completed at a community college before transfer. The new policy should result in an increased number of community college students who transfer to the universities and complete baccalaureate degrees.

Increased Transfer Credits for the Bachelor of Applied Science (BAS) Degree

The Arizona Board of Regents approved an increase in the number of transfer hours for the BAS degree. Transfer students with an associate of applied science degree and who complete additional prescribed general education courses can transfer up to 75 credit hours to the universities.

Shared Course Numbering System Plan

SB1186, codified in A.R.S. §15-1824, requires the public community college districts and the universities to develop and implement a shared numbering system for courses that transfer from community colleges to the universities toward a baccalaureate degree. A committee with membership from each of the community college districts and universities reviewed several common numbering models from other states. The report summarizing the results of the analysis and the selected approach, including anticipated costs to implement and maintain the new system, is included in Part II of this report as required by the legislation.

2009-2010 Progress Report
ARTICULATION AND TRANSFER FOR
ARIZONA PUBLIC POSTSECONDARY EDUCATION

BACKGROUND

In 1996, the Arizona Legislature directed the state's public community colleges and universities to cooperate in articulating course transfers and academic programs, and to collaborate in identifying and meeting the postsecondary education needs of Arizona citizens. In response to this legislative directive, the Arizona Board of Regents (ABOR) and the State Board of Directors for Community Colleges of Arizona (SBDCCA) enhanced existing collaborative efforts and implemented services and procedures. When the SBDCCA was disestablished by the state legislature in 2003, the community college responsibilities were assumed by their district governing boards. The oversight of the Joint Conference Committee (JCC) consisting of members of both the public universities and community college districts ensured cooperation and collaboration through 2008 when they disband. At the end of the 2009-10 fiscal year, the Arizona Community College Presidents' Association worked with the Board to oversee APASC. In August 2010, the Joint Council of Presidents, which includes the presidents from the public community colleges and universities, agreed to accept the oversight of APASC. As required, regular progress reports have been submitted to the legislature: 1996-2002 from ABOR and SBDCCA; and since 2003 from ABOR and the community colleges through the Arizona Community Colleges Association (ACCA).

- Since 1996, the report has outlined progress implementing the statewide transfer model. The model was designed by the statewide Transfer Articulation Task Force (TATF) and is now being guided by the Academic Program Articulation Steering Committee (APASC), a group of community college and university academic officers.

- Since 1998, the report to the Legislature has also addressed a collaborative process to identify and meet statewide postsecondary needs. The progress report that follows addresses both postsecondary needs and articulation.

- This report is submitted to the legislature in response to ARS 15-1824.

ARIZONA TRANSFER ARTICULATION SYSTEM STATUS AND CHANGES

Organizational Changes

In the Fall of 2010, APASC completed a major organizational restructuring with a goal of increasing the numbers of students who transfer and receive baccalaureate degrees. This new organizational structure also represents a new direction for APASC. Since the release of the 1996 TATF report, the focus for APASC and its committees have been on implementing the transfer system outlined in the report to even the playing field for all transfer students and to reduce loss of credits at transfer. That system is well established, as was confirmed by the study of Hezel Associates in 2007. Although improvements to that system continue to be made, APASC members recognized that in order to remain a viable organization, they needed to expand the organization's priorities to support other state efforts aimed at increasing the number of citizens with a baccalaureate degree.

Over the past two years, the leadership of APASC has worked to develop a new organizational model focused on the education pipeline. Their reasons for developing this new model included:

1. Developing formal ties with the K-12 system and the Arizona Department of Education as key partners in transfer, articulation and curriculum alignment;
2. Enhancing curricular alignment between the secondary and postsecondary institutions;
3. Developing and implementing marketing and advertising strategies to ensure that transfer information is disseminated to multiple stakeholders in an effective, efficient and timely manner; and
4. Improving student support systems.

To further these objectives, a new group has been formed within APASC, the **Consortium for Transfer and Alignment (ACTA)**, which includes the Chief Academic Officers from all the public and tribal postsecondary institutions, two urban and one rural high school superintendents, a rural JTED superintendent, and a member of the Arizona Department of Education. ACTA will meet initially during the fall of 2010.

The new Joint Council of Presidents, a body comprised of all community college presidents/chancellors, the three university presidents, and the president of ABOR, will provide oversight for APASC.

Please refer to Appendix 1 for the new organizational structure.

Improvements to the Arizona Transfer System

Arizona's transfer system is built on several major components: the Arizona General Education Curriculum (AGEC), common courses for most university majors which students may complete at a community college; a network of faculty discipline-specific articulation task forces who address the transfer of courses between institutions and programmatic requirements, and an extensive set of online tools for students and advisors, aztransfer.edu. Key initiatives and improvements during the past year are described below.

AZtransfer.com

- An Exam Equivalency Guide, in beta version, has been launched which shows the credits earned with specific scores on standardized tests. Advanced Placement (AP), International Baccalaureate (IB), College Level Examination Program (CLEP) and the Dantes Subject Standardized Tests (DSST) are included in the Guide.
- A new online tool "Get Started!" has been added to help users navigate options in higher education. By answering just a few questions, student will be directed to appropriate resources for making future postsecondary plans.
- The AZtransfer staff and ADE have taken initial steps to determine how Education and Career Action Plans (ECAPs) might be linked to AZtransfer.com to assist with college planning in high school.
- Students may now upload completed courses into academic program planning guides rather than entering them manually.
- Community college Chief Information Officers (CIOs) began discussions about the option of sending electronic transcripts statewide.

ATFs Address Test Alignment

Faculty ATFs have, over the last several years, been reviewing institutional equivalencies for Advanced Placement (AP) exams and College Level Examination Program (CLEP) exams in an effort toward establishing common equivalencies statewide. In the fall of 2009, with more high schools offering the International Baccalaureate Programme (IB), several ATFs added IB tests to their consideration. The status of their work is available to students in the new Exam Equivalency Guide (EEG), mentioned above, which gives them quick and easily accessible information on required exam scores for credit on all of the standardized exams.

This project continues and will be expanded for the fall 2010 ATF meetings, to meet the requirements HB2725.

Arizona General Education Curriculum (AGEC) Numbers Rise

Community College students who complete an AGEC satisfy all lower division general education requirements at the three universities. An AGEC constitutes over half (35-38) of the curricular unit requirements for transfer associates degrees. Since there is strong evidence that completion of the AGEC has a positive correlation with academic success for transfer students at the universities (Hezel Associates evaluation of ATASS in 2007; subsequent data generated by ASSIST), the numbers of students who complete an AGEC, transfer and graduate from the universities are measures of student success.

- Since 2002, the numbers of students who have completed the AGEC has tripled (see chart in Appendix 2).
- The number of students transferring with a transfer associate degrees (includes embedded AGEC and common major courses) has more than doubled since 2004 and represents an increasing percentage of new transfer students each year.

- However, the rate of students transferring from the community colleges has remained relatively flat in recent years, one of the issues APASC intends to address with its new structure. And it is estimated than less than half of the students who complete an AGEC transfer to a university. These students have the background to succeed at the university level, but cannot be individually identified to recruit them back to school. A statewide longitudinal student data system could address this critical issue.

ABOR Admissions Policy Changes Tied to Transfer Student Success

A recent analysis of student success (persistence, graduation, GPA) using data from ASSIST revealed that too many students were admitted to the universities, based on the ABOR admission policy, who were not succeeding. As a result the policy was revised to bring the admission requirements more in line with the evidence of student success. While the universities have the latitude to consider individual circumstances in admitting students, the policy is intended to provide stronger guidance to students and advisors in preparing for transfer.

Marketing Strategy for Transfer

A primary recommendation in the 2007 Hezel Study was to aggressively market Arizona's transfer system. APASC contracted with a marketing and design firm to develop marketing materials and social network sites. With the retirement of the business analyst in 2011, a marketing and communication director position is being created. This individual will develop and implement a marketing plan and communication plan for transfer and articulation statewide.

TRANSFER SYSTEM SUPPORTS

Management

Consistent with the 1996 Transfer Articulation Task Force (TATF) recommendations, the State, universities, community college districts and tribal colleges jointly fund APASC. The FY10 APASC budget was $786,908. These financial resources fund approximately six positions that support statewide transfer efforts:

- 1.75 FTE technical analysts;
- 1.75 FTE ASSIST staff;
- 1 FTE Business analyst; and
- 1 FTE Articulation facilitator

Technology and Data Systems

AZTransfer.com

The website was redesigned in 2008, which has resulted in a significant increase in its usage. The first complete year for which usage statistics were collected after deploying the new website was 2008-09. The increase in the number of hits to the website over the last three years is reflected below:

- 2007-2008 11.9 million
- 2008-2009 15.9 million
- 2009-2010 26.1 million

Peak usage of the website occurred in April 2010 (during the time students enroll for fall classes). The website had 3.7 million hits and nearly 40,000 visitors that month. A number of other applications and services developed and supported by the AZTransfer.com staff are listed in Appendix 3.

Arizona State System for Information on Student Transfer (ASSIST)

ASSIST provides the data to monitor transfer patterns and information on student success. At the end of fiscal year 2010, the ASSIST database held records for more than 2.4 million current and former students who have taken over 24 million courses. There are approximately 90 different data elements in the database for community college students and 65 for university students.

Statewide and institutional transfer rates for the new-to-higher education cohorts are tracked through ASSIST. Beginning with the 2001-02 cohort, the reports measure students in five cohorts tracked up to six years to determine if they transferred to an Arizona public university.

- ASSIST data are used by community colleges in part to:
  - Track persistence, time-to-degree, GPAs and majors of their students at other Arizona public institutions;
  - Comply with federal reporting requirements for Carl Perkins IV funding and Student Right to Know information; and
  - Comply with state dual enrollment course reports and grant reports for federal and non-profit agencies.

- ASSIST data are used by the universities in part to:
  - Generate university system-wide reports to APASC and ABOR on topics such as persistence rates, graduation rates and average university GPA of transfer students broken down by transfer hours and transfer degrees; and
  - Conduct special studies focusing on the transfer student profile, transfer rates and enrollment patterns of their key feeder institutions.

IDENTIFYING AND MEETING THE STATE'S POSTSECONDARY NEEDS

The Arizona public community colleges and universities continue to act jointly to meet the postsecondary needs of Arizona citizens. Examples of initiatives include:

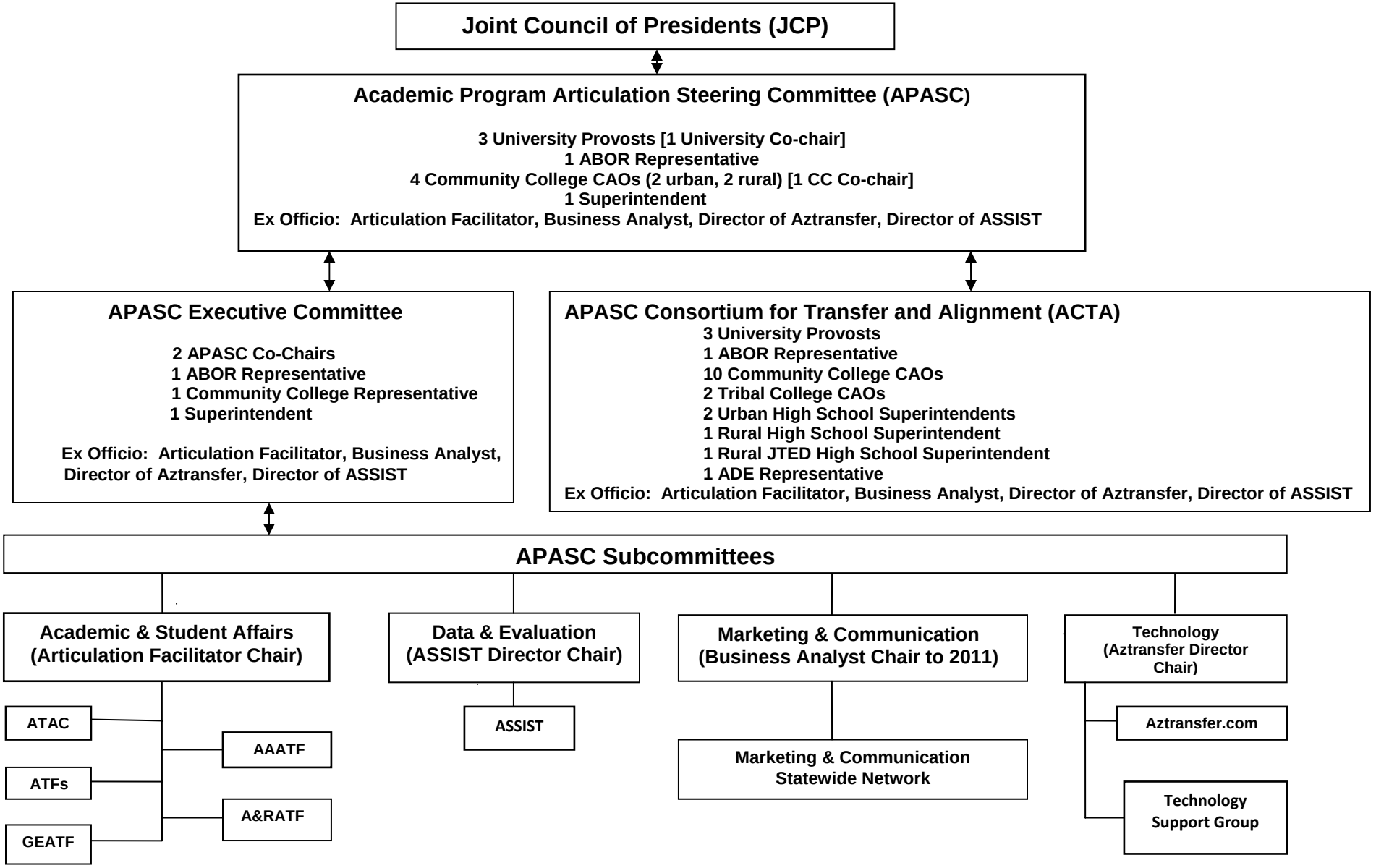
- ASU developed the Maricopa to ASU Pathways Project *(*MAPPS) and similar TAGS with non-Maricopa colleges all of which provide academic road maps for community college students who know the major they plan to pursue at ASU. As of Fall 2010, more than 2500 students had signed up to participate as MAPP students.
- NAU and Yavapai established a regional campus in Prescott Valley so students who are limited by the ability to travel can still earn a baccalaureate degree.
- The UA is developing options for students in Pima, Cochise, Yuma and Santa Cruz counties to complete baccalaureate degrees in their hometowns.

Lumina Educational Foundation Grant – Getting AHEAD

Getting AHEAD is initiative made possible through a grant from the Lumina Foundation for Education. Major objectives being pursued through this initiative include: expanding partnerships with the community colleges and developing new institutional structures; implementing student-centered advising and career planning; developing a new higher education financing model; addressing the coordination and governance of public postsecondary institutions; and implementing a communication and public engagement program. Student-centered advising and career planning and the implementation of communication and public engagement programs closely align with the work being done through APASC to ensure that students are better prepared for postsecondary work and their careers.

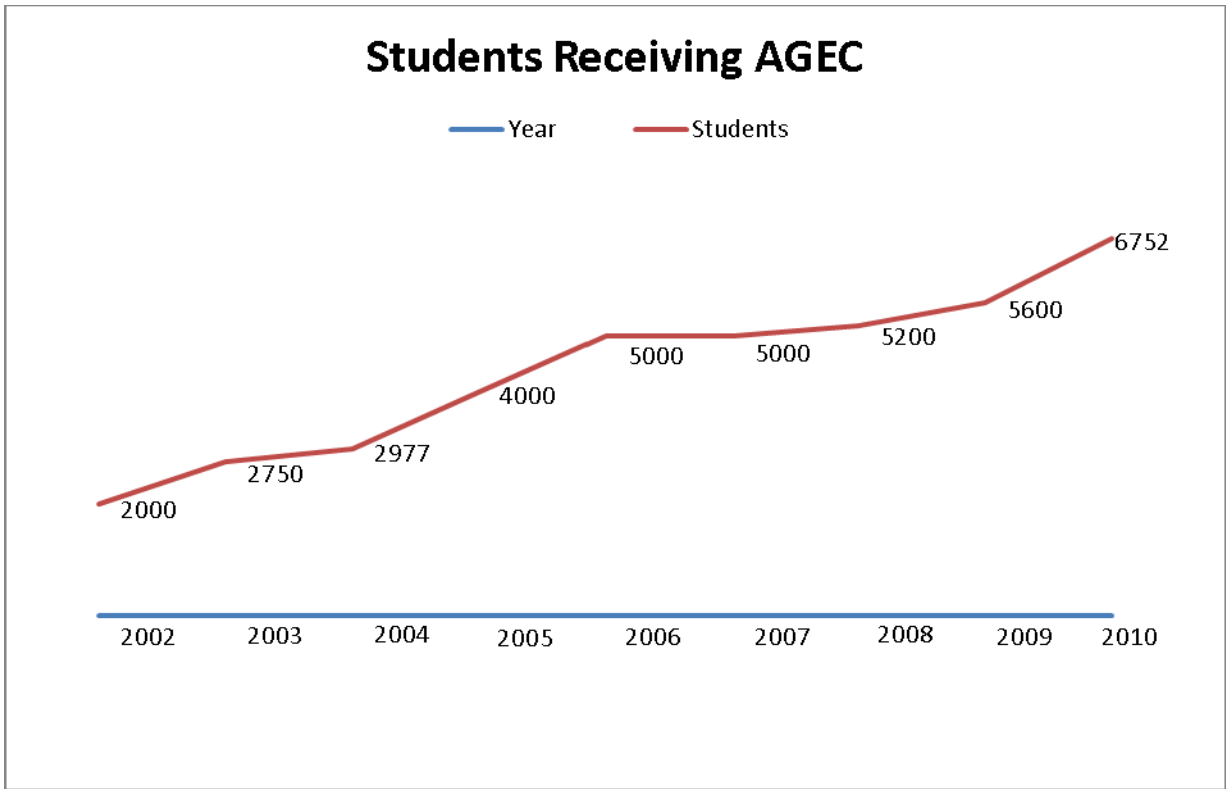
APPENDIX 1

Academic Program Articulation Steering Committee (APASC)



Final: 8-24-10 (presented to JCP); rev: 10-25-10

APPENDIX 2


Students Receiving AGEC
Year
Students
2000
2750
2977
4000
5000
5000
5200
5600
6752
2002
2003
2004
2005
2006
2007
2008
2009
2010

APPENDIX 3

Web Application Key

AGECWeb Arizona General Education Curriculum Database http://www.aztransfer.com/cgi-bin/WebObjects/agecweb	A tool which allows (1) data-entry from community and tribal colleges to maintain their lists of AGEC courses, and (2) students to view the most up-to-date information on AGEC courses through the Major Guides.
ACETS Arizona Course Equivalency Tracking System https://www.aztransfer.com/cgi-bin/WebObjects/acets	The electronic process by which community and tribal colleges submit their courses to the universities for evaluation. Evaluated courses then appear in the Course Equivalency Guide (CEG).
ACRES Arizona Curriculum Review and Evaluation System https://www.aztransfer.com/cgi-bin/WebObjects/acres	An electronic curriculum routing system designed to be customized for each institution. Developed as a companion tool to ACETS, it allows courses to follow an approval process (with the final step, for community colleges, being the ACETS submissions).
ATF Chatlines Articulation Task Force Chatlines https://www.aztransfer.com/cgi-bin/WebObjects/ATF	A comprehensive resource which allows both institutional and statewide staff to maintain membership databases, curriculum (prefixes, degrees and pathways), meeting reports, and the master statewide calendar. Also, Chatlines has features for submitting action items, useful links to portal pages, and help documentation.
CEG Course Equivalency Guide https://www.aztransfer.com/cgi-bin/WebObjects/Admin_CEG	Provides articulation information, i.e. how community college courses transfer to the three public universities.
Exam Equivalency Guide http://aztransfer.com/cgi-bin/WebObjects/ATASS.woa/wa/ExamEquivGuide	All exam scores have been articulated to courses offered at each public university and community college statewide. This includes Advanced Placement (AP), College Level Proficiency Exam (CLEP), Dantes (DSST), and International Baccalaureate (IB).
Major Guides http://www.aztransfer.com/MajorGuides	For students who have selected a major but not a university. This source provides recommended lower division courses at the student's community college that will meet the requirements for that major at any of the three universities.
Transfer Guides http://www.aztransfer.com/TransferGuides	For students who have selected a major and a university. Transfer Guides provide information for Arizona community college students about the courses they may take at the college that will meet degree requirements for a particular university bachelor's degree.
U.Select Planning Guides https://www.transfer.org/uselect/	A tool which allows students to enter their coursework to determine their progress towards selected bachelor's degrees at the universities; automatic upload of community college transcripts is also an option for colleges which have installed the required IMS software. Once courses are entered, students may explore any of the majors that are available for applicability of their completed and planned coursework.

PART II

Course Numbering System for

Arizona's Universities and Community Colleges

Executive Summary

SB 1186: Postsecondary Institutions; Course Numbering requires public universities and community colleges to develop and implement a shared numbering system that identifies courses that transfer from community colleges to the universities toward a baccalaureate degree.

In August, the Joint Council of Presidents of the community colleges and universities approved an action plan for developing a course numbering model. Under the leadership of a steering committee, the plan called for a statewide committee with members appointed by the presidents/chancellors of the 13 public community colleges and universities to:

- Review and select course numbering models for further study and cost analysis.
- Establish protocols for and conduct costs analyses.
- Provide options and costs to Joint Council of Presidents
- Pending approval of Joint Council of Presidents, develop final report for submission to state legislature.

During the ensuing weeks, the steering committee and the full committee met several times to carry out the plan. After reviewing several models from other states and considering options for Arizona, the committee selected two models of shared numbering systems for further review and cost analysis. These two options were presented to the Joint Council of Presidents on November 12 and they unanimously selected the ***Shared Unique Number (SUN)*** system for implementation.

Shared Unique Number

In this model, community college and university courses with established equivalencies would be assigned a *shared unique number* (SUN), very distinctive from any of the existing institutional numbering systems.

There are several key reasons this model was selected: it will provide clear benefits to students; it can be implemented under existing structures; it will be less disruptive to the curriculum development processes of the institutions; and is less costly than the other option. The costs to implement the SUN system are estimated to be under $1.5 million and approximately $162,000 annually to maintain it.

Although cost was a primary consideration, given the current financial constraints under which all of the institutions are operating, the presidents also indicated that the SUN system would provide the institutions with the flexibility they need to respond quickly to changing needs.

The SUN system will form a bank of identifiable common courses that will be mapped to an institution's existing courses. The institution's prefixes and numbers will not change and will continue to be used within the institution; however, catalogs, transcripts, web sites/databases, and degree audit programs will also reflect the SUN.

A Course Numbering System for Arizona's Public Universities and Community Colleges

INTRODUCTION

Senate Bill 1186 (SB 1186), passed during the 2010 legislative session and codified in ARS 15-1824, calls for Arizona's community colleges and universities to develop and implement a shared course numbering system. The requirements of SB-1186 include the following:

- The community college districts and the universities shall develop and implement a shared numbering system for courses that transfer from community colleges to Arizona's public universities toward a baccalaureate degree.

- The system is to specifically address courses which satisfy the requirements for the Arizona General Education Curriculum (AGEC) and common major requirements for equivalent majors as defined in the report of the transfer articulation task force accepted by the Joint Legislative Budget Committee on December 4, 1996.

- A report is to be presented to the legislature's education committees by December 15, 2010 which should include an analysis of options for a shared numbering system. The options analyzed in the report should include a common course numbering system. The report shall recommend:

    1. An agreed upon shared numbering system;
    2. A plan to implement the system;
    3. The projected cost of system implementation and maintenance, and identification of potential one-time and on-going resources to fund system implementation and maintenance.

The Joint Council of Presidents (JCP), an organization of the university and community college presidents and chancellors, established a Shared Numbering Steering Committee (SC) to oversee the development of the response to SB 1186. The SC included representatives from the Arizona Board of Regents (ABOR), the Executive Vice Chancellors and Provosts from the Maricopa and Pima community college districts, and the co-chairs and the business analyst from the statewide Academic Programs Articulation Steering Committee (APASC) (Appendix 1).

In addition, a statewide Shared Numbering System Committee (SNSC), consisting of representatives from all ten Arizona community college districts and the three ABOR universities (Appendix 1), was established to review options, analyze costs, recommend a preferred approach, and begin planning for the implementation of the selected system. The SC and SNSC will be responsible for the eventual implementation of the system.

COMMON COURSE NUMBERING MODELS

There is no single definition of shared or common course numbering. The SC, based upon a review of systems in place in 22 states (see Appendix 2), identified four primary "common course" numbering models, which form a continuum of complexity and conformity required by the institutions. The four models are:

1. *Course Equivalency Guide (CEG)*

   Community College courses are evaluated by community college and university faculty to determine equivalency of course content. Equivalent courses are included in a CEG. [This is the model currently in place in Arizona. The CEG began in 1973 and became available as searchable online system in 1997.]

2. *Shared Unique Number*

   Equivalent community college and university courses share a "common" unique number that is mapped to each institution's existing courses, preserving institutional prefixes and numbers. The system usually is maintained by a single "central" administrative office and is available to faculty and students via a searchable database. This model also is referred to as a "virtual" or "supra" numbering system.

3. *Community College "Crosswalk"*

   Equivalent community college courses use the same course prefix, number, and title. University courses retain each institution's prefix, number, and title. Community college courses are then "aligned" via a "crosswalk" system to each of the university courses via a searchable database.

4. *Same Prefix, Number, Title*

   Equivalent courses at participating institutions are assigned the **same** prefix, number, and title, **and** typically share an agreed upon percentage of course content and/or learning outcomes.

Analysis of Course Numbering Models

The Steering Committee (SC) charged the Shared Numbering System Committee (SNSC) with the following tasks:

1. Review each of the four course numbering models listed above;
2. Identify the pros and cons for each of the models;
3. Select the models that warrant further study;
4. Develop a process for the analysis of the implementation and maintenance costs for the selected models;
5. Identify an estimated amount of time to implement each model.

The SC identified 204 courses that would be included in the analysis because they meet the criteria of (1) satisfying the requirements of the Arizona General Education Curriculum (AGEC) and/or (2) are common major courses as defined in the 1996 Transfer Articulation Task Force (TATF) report (accepted by Joint Legislative Budget Committee, 4 December 1996). Of these 204 courses, 90 already have direct equivalencies between the community colleges and the universities, and 114 do not (see Appendix 3).

The review process revealed a number of issues on the transfer of courses that could not be resolved simply by a common course numbering system but should be addressed by APASC:

- Some courses transfer to two of the universities, but not the third. Transfer of courses that meet AGEC and common course requirement should be fairly standard among the universities.
- The existing transfer system, which is built on community college to university transfer, needs to address multi-direction transfer of courses, because many students attend multiple institutions in the state.
- Some of the courses among the 204 identified in this process were only common among 3 institutions. It is anticipated that institutions will begin to develop more courses for the common bank, another benefit for students.

TWO OPTIONS FOR ARIZONA

After considerable discussion the SNSC recommended that two of the models be selected for further analysis: *Shared Unique Number* and *Same Prefix, Number, and Title*. Subsequently, each of the 13 institutions developed cost estimates for implementing and maintaining each of the two models.

A. Same Prefix, Number, Title

In this model, courses are assigned the same prefix, number, and title, and are regarded as equivalent in all aspects (e.g., pre-requisites, credit hours, course level, course descriptions, course content, course outcomes, etc.).

This model would be most transparent for identifying equivalent courses statewide and would be the simplest for students to understand. A student would know that a course at one institution would be the same course at the transfer institution, whether transferring to a community college or university. However, course content and learning outcomes need to be significantly common in this model; for example, several states use a 75-80% rule for common course content in order to assign a common course number. While the Arizona universities accept many community college courses as “equivalent” to their courses, these courses are considered acceptable substitutes but they have not been analyzed to serve as the same course. To implement this model, university and community college faculty at the

13 institutions would need to agree upon all of the components of any course that would be given the same prefix, number, and title, since these courses would become interchangeable among institutions.

***Issues/Challenges*:** Several issues were raised by the SNSC in considering this option.

- ***Cost.*** The most significant barrier to this model is the estimated cost, which is detailed later in the report, although it is difficult to anticipate all of the costs at this time due to the complexities associated with it. For example, course prefix-number information is used for multiple purposes at the department, college and institutional level for data and management decisions. A statewide common course prefix and number will have a ripple effect on other areas of the institution which cannot be determined at this time.

- ***Cost/Benefit***. The SNSC expressed concern about the overall benefit of this model for the cost. A numbering system provides information on course to course transfer, but it does not tell students *how* courses apply to degree programs, typically the more critical information for accurate academic planning. No numbering system can address that issue.

- ***Reduction in curricular flexibility and innovation***. This system could significantly limit the ability of institutions to address changes within their curricula, modify both courses and programs, and be responsive to changes. Any changes would need to be agreed to by all institutions that offer the course, a very time consuming and significant barrier to curricular change.

- ***Limited course bank***. Because of the level of commonality required for this model to be successful, the bank of courses will be fewer than in other models. For example, a similar course offered by several community colleges may apply to the Arizona General Education Curriculum and transfer to all of the universities, but it may not have the commonality among the 13 institutions to receive a the same prefix, number, and title. The downside, especially for some community colleges, may be fewer students enrolling in those courses that are not included in the common number bank.

- ***Technical limitations***. Student information systems at some institutions don't have the capacity to provide the technical support that this model will require, such as reusing course prefix and numbers (for example, if the common course for general psych became PSY 110 and an institution already used that number for adolescent psychology, they would have to change the prefix and number for that course too).

- ***Statewide Management System***. A statewide entity would need to be established to manage the course numbering system to do some of the following: coordinate among the institutions to approve new common courses based on the commonality requirements; approve course proposals from institutions that wish to offer common courses; assign the common prefix and numbers; approve changes to existing courses; and keep the technical systems up to date.

B. Shared Unique Number System

In this model, community college and university courses with established equivalencies would be assigned a *shared unique number* (SUN), very distinctive from any of the existing institutional numbering systems. This SUN system would form a bank of identifiable common courses that would be mapped to an institution's existing courses. The institution's prefixes and numbers would not change and would continue to be used within the institution; however, catalogs, transcripts, web sites/databases, and degree audit programs would reflect the SUN. Because this model is built on a course equivalency or substitute that doesn't require the courses to be exact, it would include a high percentage of the 204 courses analyzed. In addition, because of the system's flexibility, the course bank could be readily expanded. The current CEG system has the capacity and functionality to provide the foundation and technology for implementing the SUN model is relatively low cost and could be implemented fairly expeditiously, probably within 12 months, and could be done for the most part within the existing institutional structures. However, this model will require additional community college and university faculty time as explained later in this report.

Issues/Challenges*:* The following concerns with this model were raised by the SNSC.

- ***Costs.*** While this is the less costly of the two models and could be implemented much more quickly because it will be built on existing structures, it was difficult to anticipate all of the costs associated with implementing and maintaining it.

- ***Cost/Benefit***. As stated above, no numbering system will address the issue of how courses apply to degree programs. However, this model would provide a very substantial improvement over the current system

- ***Additional course number***. This system would create an additional course identifier for students to understand and would add another layer that might make information less clear, creating a potential barrier.

- ***Getting out the information***. This approach would require changes to existing web sites and materials, and an aggressive marketing campaign for students, advisors, and others would need to be developed and launched.

COST ESTIMATES FOR THE TWO OPTIONS

A. Same Prefix, Number, Title

Faculty Time – Implementation

Based upon input received from states with this model (e.g., Florida), it is estimated that the amount of university and community college faculty time required to perform all of the tasks involved with establishing a "Same Prefix, Number, Title" system is the equivalent of teaching one course for one semester for ***each*** of the 90 directly equivalent courses and one course for two semesters for each of the 114 non-equivalent courses. An estimate of the cost of faculty time was calculated in two ways: (1) using average faculty salaries as the cost of releasing faculty from their teaching responsibilities (In-Kind contributions) and (2) using the average adjunct salary rates for the actual replacement cost to cover faculty release time. Estimates for faculty time to deal with the 204 courses summarized in Tables 1- 4 (ERE was not included in the calculations). The total estimated in-kind contribution for faculty salaries for the 204 courses is $47,017,890 and actual replacement costs are estimated to be $10,508,280 over the three year implementation period of the "Same Prefix, Number, Title" model.

Table 1. Estimated In-Kind Faculty Salary Contributions For Implementing "Same Number, Prefix, Title" Numbering System Among Arizona Universities and Community Colleges Using Average Faculty Salaries (No ERE) (90 equivalent courses -- one course release).

Course Type	Number of Courses	Average University Salary per 3-Credit Course	Average Urban CC Salary per 3-Credit Course	Average Rural CC Salary per 3-Credit Course	Total University Faculty Cost per Course Type	Total Urban CC Faculty Cost per Course Type	Total Rural CC Faculty Cost per Course Type	Total Faculty Cost per Course Type
STEM	24	$ 13,125	$ 11,500	$ 10,685	$ 945,000	$ 552,000	$2,051,520	$ 3,548,520
Social/Behavioral	30	$ 13,125	$ 11,500	$ 10,685	$ 1,181,250	$ 690,000	$2,564,400	$ 4,435,650
Humanities	30	$ 13,125	$ 11,500	$ 10,685	$ 1,181,250	$ 690,000	$2,564,400	$ 4,435,650
Fine Arts	6	$ 13,125	$ 11,500	$ 10,685	$ 236,250	$ 138,000	$ 512,880	$ 887,130
Total:	90				$ 3,543,750	$ 2,070,000	$7,693,200	**$ 13,306,950**

Table 2. Estimated In-Kind Faculty Salary Contributions For Implementing "Same Number, Prefix, Title" Numbering System Among Arizona Universities and Community Colleges Using Average Faculty Salaries (No ERE) (114 non-equivalent courses -- two course releases).

Course Type	Number of Courses	Average University Salary per 3-Credit Course	Average Urban CC Salary per 3-Credit Course	Average Rural CC Salary per 3-Credit Course	Total University Faculty Cost per Course Type	Total Urban CC Faculty Cost per Course Type	Total Rural CC Faculty Cost per Course Type	Total Faculty Cost per Course Type
STEM	20	$ 13,125	$ 11,500	$ 10,685	$ 1,575,000	$ 920,000	$ 3,419,200	$ 5,914,200
Social/Behavioral	47	$ 13,125	$ 11,500	$ 10,685	$ 3,701,250	$ 2,162,000	$ 8,035,120	$ 13,898,370
Humanities	35	$ 13,125	$ 11,500	$ 10,685	$ 2,756,250	$ 1,610,000	$ 5,983,600	$ 10,349,850
Fine Arts	12	$ 13,125	$ 11,500	$ 10,685	$ 945,000	$ 552,000	$ 2,051,520	$ 3,548,520
Total:	114				$ 8,977,500	$ 5,244,000	$19,489,440	**$ 33,710,940**

Table 3. Estimated Faculty Replacement Costs For Implementing "Same Number, Prefix, Title" Numbering System Among Arizona Universities and Communty Colleges Using Actual Adjunct Faculty Replacement Rates (No ERE) (90 equivalent courses -- one course replacement).

Course Type	Number of Courses	University Adjunct Rate per 3-Credit Course	Urban CC Adjunct Rate per 3-Credit Course	Rural CC Adjunct Rate per 3-Credit Course	Total University Cost per Course Type	Total Urban CC Cost per Course Type	Total Rural CC Cost per Course Type	Total Faculty Cost per Course Type
STEM	24	$ 8,000	$ 2,130	$ 1,650	$ 576,000	$ 102,240	$ 316,800	$ 995,040
Social/Behavioral	30	$ 5,000	$ 2,130	$ 1,650	$ 450,000	$ 127,800	$ 396,000	$ 973,800
Humanities	30	$ 4,000	$ 2,130	$ 1,650	$ 360,000	$ 127,800	$ 396,000	$ 883,800
Fine Arts	6	$ 4,000	$ 2,130	$ 1,650	$ 72,000	$ 25,560	$ 79,200	$ 176,760
Total:	90				$ 1,458,000	$ 383,400	$ 1,188,000	**$ 3,029,400**

Table 4. Estimated Faculty Replacement Costs For Implementing "Same Number, Prefix, Title" Numbering System Among Arizona Universities and Communty Colleges Using Actual Adjunct Faculty Rates (No ERE) (114 non-equivalent courses -- two course replacements).

Course Type	Number of Courses	University Adjunct Rate per 3-Credit Course	Urban CC Adjunct Rate per 3-Credit Course	Rural CC Adjunct Rate per 3-Credit Course	Total University Cost per Course Type	Total Urban CC Cost per Course Type	Total Rural CC Cost per Course Type	Total Faculty Cost per Course Type
STEM	20	$ 8,000	$ 2,130	$ 1,650	$ 960,000	$ 170,400	$ 528,000	$ 1,658,400
Social/Behavioral	47	$ 5,000	$ 2,130	$ 1,650	$ 1,410,000	$ 400,440	$ 1,240,800	$ 3,051,240
Humanities	35	$ 4,000	$ 2,130	$ 1,650	$ 840,000	$ 298,200	$ 924,000	$ 2,062,200
Fine Arts	12	$ 4,000	$ 2,130	$ 1,650	$ 288,000	$ 102,240	$ 316,800	$ 707,040
Total:	114				$ 3,498,000	$ 971,280	$ 3,009,600	**$ 7,478,880**

Faculty Time – Maintenance

Once implemented, university and community college faculty time will be required to maintain the system. Faculty tasks include, but are not limited to, considering new courses, reviewing changes to existing course content originated by any one of the institutions, and reviewing common learning outcomes/course content. It is estimated that these tasks will be the equivalent of a one course reduction every two years (0.5 courses per year) for each discipline (there are 33 disciplines represented by the 204 courses). Cost estimates for faculty time to maintain the system are summarized in Tables 5 and 6 (again using in-kind contributions and adjunct replacement costs). Annual faculty maintenance costs are $2,439,608 (In-Kind) and $555,090 (Adjunct Replacements) respectively.

Table 5. Estimated Annual Average In-Kind Faculty Salary Contributions For Maintaining "Same Number, Prefix, Title" Numbering System Among Arizona Universities and Communty Colleges Using Average Faculty Salaries (.5 course release per discipline per year).

Course Type	Number of Disciplines	Number of Course Replacements	Average University Salary per 3-Credit Course	Average Urban CC Salary per 3-Credit Course	Average Rural CC Salary per 3-Credit Course	Total University Faculty Cost per Course Type	Total Urban CC Faculty Cost per Course Type	Total Rural CC Faculty Cost per Course Type	Total Faculty Cost per Course Type
STEM	7	3.5	$ 13,125	$ 11,500	$ 10,685	$ 137,813	$ 80,500	$ 299,180	$ 517,493
Social/Behavioral	18	9	$ 13,125	$ 11,500	$ 10,685	$ 354,375	$ 207,000	$ 769,320	$1,330,695
Humanities	5	2.5	$ 13,125	$ 11,500	$ 10,685	$ 98,438	$ 57,500	$ 213,700	$ 369,638
Fine Arts	3	1.5	$ 13,125	$ 11,500	$ 10,685	$ 59,063	$ 34,500	$ 128,220	$ 221,783
Total:	33	16.5				$ 649,688	$ 379,500	$ 1,410,420	**$2,439,608**

Table 6. Estimated Annual Average Faculty Replacement Costs For Maintaining "Same Number, Prefix, Title" Numbering System Among Arizona Universities and Communty Colleges Using Average Adjunct Rates (.5 course replacement per discipline per year).									
Course Type	Number of Disciplines	Number of Course Replacements	University Adjunct Rate per 3-Credit Course	Urban CC Adjunct Rate per 3-Credit Course	Rural CC Adjunct Rate per 3-Credit Course	Total University Cost per Course Type	Total Urban CC Cost per Course Type	Total Rural CC Cost per Course Type	Total Faculty Cost per Course per year
STEM	7	3.5	$ 8,000	$ 2,130	$ 1,650	$ 84,000	$ 14,910	$ 46,200	$ 145,110
Social/Behavioral	18	9	$ 5,000	$ 2,130	$ 1,650	$ 135,000	$ 38,340	$ 118,800	$ 292,140
Humanities	5	2.5	$ 4,000	$ 2,130	$ 1,650	$ 30,000	$ 10,650	$ 33,000	$ 73,650
Fine Arts	3	1.5	$ 4,000	$ 2,130	$ 1,650	$ 18,000	$ 6,390	$ 19,800	$ 44,190
Total:	33	16.5				$ 267,000	$ 70,290	$ 217,800	**$ 555,090**

Staff Time – Implementation

Staff time would be required to implement changes to reflect "Same Prefix, Number, Title" in the following items, documents, and/or materials: course bank, catalog, course prerequisites, course co-requisites, historical numbers (to cross reference), template for scanning external transcripts, update critical tracking, course repeat rules, degree requirements, AGEC, transcripts, websites, class schedules, articulation agreements, brochures, degree audits, and general education designations (this is not an exhaustive list). Based upon experiences in other states, it is estimated that it will require the equivalent of two (2) FTE administrative and two (2) FTE technical staff at each university, the Maricopa County Community College District (MCCCD), and Pima Community College District (PCCD), and one (1) FTE administrative and one (1) technical staff at the other eight community colleges to complete all of the various tasks over a three-year period to implement the system. It is estimated that half of the effort would be contributed by existing administrative and technical staff and half would be required new staff (Tables 7, 8).

Table 7. Estimated Average Staff Salary In-Kind Contribution For Implementing "Same Number, Prefix, Title" Numbering System Among Arizona Universities and Community Colleges (no ERE) (one-year and three-year estimates).							
		Annual FTE		Annual		Totals	
Staff		University	CC's	Salary	ERE	One-Year	Three-Year
Administrative		3	6	$ 60,000	$ -	**$ 540,000**	**$ 1,620,000**
Technical		3	6	$ 75,000	$ -	**$ 675,000**	**$ 2,025,000**
		6	12	$ 135,000	$ -	**$ 1,215,000**	**$ 3,645,000**

Table 8. Estimated Average Additional Staff Costs For Implementing "Same Number, Prefix, Title" Numbering System Among Arizona Universities and Community Colleges (one-year and three-year estimates).							
		Annual FTE		Annual		Totals	
Staff		University	CC's	Salary	ERE	One-Year	Three-Year
Administrative		3	6	$ 60,000	$ 21,000	**$ 729,000**	**$ 2,187,000**
Technical		3	6	$ 75,000	$ 26,250	**$ 911,250**	**$ 2,733,750**
		6	12	$ 135,000	$ 47,250	**$ 1,640,250**	**$ 4,920,750**

Staff Time – Maintenance

Annual maintenance of the system will require the equivalent of 0.5 FTE administrative and 0.5 FTE technical staff at each institution to maintain the system of which half would be in-kind contributions of existing staff and half new staff (Tables 9, 10).

Table 9. Estimated Annual Average Staff Salary In-Kind Contributions to On-Going Maintenance of "Same Number, Prefix, Title" Numbering System Among Arizona Universities and Community Colleges.

Staff	Annual FTE		Annual		
	University	**CC's**	Salary	ERE	Total
Administrative	0.75	2.5	$ 60,000	$ -	**$ 195,000**
Technical	0.75	2.5	$ 75,000	$ -	**$ 243,750**
	1.5	5	$ 135,000	$ -	**$ 438,750**

Table 10. Estimated Annual Average Cost For Additional Staff For On-Going Maintenance of "Same Number, Prefix, Title" Numbering System Among Arizona Universities and Community Colleges.

Staff	Annual FTE		Annual		
	University	**CC's**	Salary	ERE	Total
Administrative	0.75	2.5	$ 60,000	$ 21,000	**$ 263,250**
Technical	0.75	2.5	$ 75,000	$ 26,250	**$ 329,063**
	1.5	5	$ 135,000	$ 47,250	**$ 592,313**

Centralized Statewide Management System. As indicated earlier in this report, a statewide entity would need to be established to manage the course numbering system to do some of the following: coordinate among the institutions to approve new common courses based on the commonality requirements; approve course proposals from institutions that wish to offer common courses; assign the common prefix and numbers; approve changes to existing courses, and keep the technical systems up to date. Costs associated with the creation of the office, development of support systems, staff, and maintenance will need to be determined.

Summary: *Same Prefix, Number, Title*

Estimated total costs over a three-year period for implementing the *Same Prefix, Number, Title* system in Arizona are summarized in Table 11 (annual maintenance costs, which would begin in year three, are included). Total estimated in-kind contributions are $49,245,390 for implementation and $2,878,358 for on-going annual maintenance of the system. Total additional funding required to implement the system is $13,788,780 for faculty replacements and new staff for implementation and $1,147,403 for on-going annual maintenance of the system.

Table 11. Total Estimated Costs Over Three Years to Implement the "Same Number, Prefix, Title" Numbering System Among Arizona Universities and Community Colleges (Annual maintenance costs would begin at the end of the third year).				
Item	**In-Kind Contributions**		**Additional Funding**	
University Faculty	$	12,521,250	$	4,956,000
CC Faculty	$	34,496,640	$	5,552,280
University Staff	$	607,500	$	1,093,500
CC Staff	$	1,620,000	$	2,187,000
Total	**$**	**49,245,390**	**$**	**13,788,780**
Annual Maintenance (Beginning Year 3)	**$**	**2,878,358**	**$**	**1,147,403**

Shared Unique Number

Faculty Time – Implementation

Implementation of the SUN model would be based upon the current CEG that is in place in Arizona and, like the CEG, the *Shared Unique Number* system would be maintained centrally (APASC) rather than at each institution. Since institutional course prefixes, numbers, and titles would be retained none of the modifications mentioned for the *Same Prefix, Number, Title* model would be required. The only major change would be the integration of the shared unique number with existing course numbers. Accordingly, no faculty time would be required to deal with the 90 courses that already have direct course equivalency (see Appendix 4). University and community college faculty would have to meet to work on direct equivalencies for the 114 non-equivalent courses (see Appendix 4). This work would be accomplished by approximately four (4) additional meetings of each of the appropriate disciplinary Articulation Task Forces (ATF), which would be scheduled over a 12-month period of time. It is estimated that it will require the equivalent of a 0.25 course replacement for each of the 114 courses to establish direct equivalencies (Tables 12, 13). The total estimated in-kind contribution for faculty salaries for the 114 courses is $2,395,193 and actual replacement costs are estimated to be $934,860 over the 12-month implementation period for the SUN model.

Table 12. Estimated Average In-Kind Faculty Salary Contributions For Implementing "Shared Unique Number" Numbering System Among Arizona Universities and Community Colleges Using Average Faculty Salaries (No ERE) (114 non-equivalent courses -- .25 course release).

Course Type	Number of Courses	University Rate per 3-Credit Course	Urban CC Rate per 3-Credit Course	Rural CC Rate per 3-Credit Course	Total University Cost per Course Type	Total Urban CC Cost per Course Type	Total Rural CC Cost per Course Type	Total Faculty Cost per Course Type
STEM	20	$ 13,125	$ 11,500	$ 10,685	$ 196,875	$ 115,000	$ 106,850	$ 418,725
Social/Behavioral	47	$ 13,125	$ 11,500	$ 10,865	$ 462,656	$ 270,250	$ 255,328	$ 988,234
Humanities	35	$ 13,125	$ 11,500	$ 10,865	$ 344,531	$ 201,250	$ 190,138	$ 735,919
Fine Arts	12	$ 13,125	$ 11,500	$ 10,865	$ 118,125	$ 69,000	$ 65,190	$ 252,315
Total:	114				$ 1,122,188	$ 655,500	$ 617,505	**$ 2,395,193**

Table 13. Estimated Average Faculty Replacement Costs For Implementing "Shared Unique Number" Numbering System Among Arizona Universities and Community Colleges Using Actual Adjunct Faculty Replacement Rates (114 non-equivalent courses -- .25 course replacement).

Course Type	Number of Courses	University Adjunct Rate per 3-Credit Course	Urban CC Adjunct Rate per 3-Credit Course	Rural CC Adjunct Rate per 3-Credit Course	Total University Cost per Course Type	Total Urban CC Cost per Course Type	Total Rural CC Cost per Course Type	Total Faculty Cost per Course Type
STEM	20	$ 8,000	$ 2,130	$ 1,650	$ 120,000	$ 21,300	$ 66,000	$ 207,300
Social/Behavioral	47	$ 5,000	$ 2,130	$ 1,650	$ 176,250	$ 50,055	$ 155,100	$ 381,405
Humanities	35	$ 4,000	$ 2,130	$ 1,650	$ 105,000	$ 37,275	$ 115,500	$ 257,775
Fine Arts	12	$ 4,000	$ 2,130	$ 1,650	$ 36,000	$ 12,780	$ 39,600	$ 88,380
Total:	114				$ 437,250	$ 121,410	$ 376,200	**$ 934,860**

Faculty Time – Maintenance

Individual faculty members maintain the current CEG by serving on the disciplinary ATFs as part of their service responsibilities to their departments and/or disciplines, and this would continue for the SUN system. At the end of the 12-month implementation period there would be no additional faculty costs associated with maintaining the SUN system.

Staff Time – Implementation

The system will be implemented and maintained centrally by APASC staff. It is estimated that it will take the equivalent of 0.75 FTE administrative staff and 0.5 FTE technical staff at each of the universities, MCCCD, and PCCD, and 0.25 FTE administrative and technical staff at the other eight community colleges to implement the SUN system. Half of these costs would be in-kind contributions and half for new staff at the universities and community colleges. In addition, 2.0 new FTE would need to be added to current APASC staffing levels to implement and maintain the system centrally (Tables 14, 15). The total estimated staff contributions cost for implementing the *Shared Unique Number* model are $343,125 (in-kind) and $683,438 (additional staff).

Table 14. Estimated Average Staff In-Kind Contributions For Implementing "Shared Unique Number" Numbering System Among Arizona Universities and Community Colleges.						
	FTE			Annual		
Staff	University	CC's	APASC	Salary	ERE	Total
Administrative	1.13	1.63	0.00	$ 60,000	$ -	$ 165,000
Technical	0.75	1.63	0.00	$ 75,000	$ -	$ 178,125
Total	**1.88**	**3.25**	**0.00**	**$ 135,000**	**$ -**	**$ 343,125**

Table 15. Estimated Average Additional Staff For Implementing "Shared Unique Number" Numbering System Among Arizona Universities and Community Colleges.						
	FTE			Annual		
Staff	University	CC's	APASC	Salary	ERE	Total
Administrative	1.13	1.63	1.00	$ 60,000	$ 21,000	$ 303,750
Technical	1.13	1.63	1.00	$ 75,000	$ 26,250	$ 379,688
Total	**2.25**	**3.25**	**2.00**	**$ 135,000**	**$ 47,250**	**$ 683,438**

Staff Time – Maintenance

The current CEG system is maintained by existing staff at the universities, community colleges, and APASC. It is anticipated that on-going annual maintenance costs of the SUN system could be handled by existing staff (university and community college in-kind contributions), with the exception of the 2.0 FTE APASC staff mentioned above. Thus, on-going annual maintenance costs for the SUN system are the costs associated with the two new APASC staff ($162,000).

Summary: *Shared Unique Number*

Estimated total costs, over a 12-month period, for implementing the SUN system in Arizona are summarized in Table 16 (annual maintenance costs are included, which would begin at the end of the 12-month implementation period). Total implementation costs are $3,087,068 of in-kind contributions and $1,439,985 of additional costs, with annual maintenance costs of an additional $162,000.

Table 16. Total Cost Estimates For Implementation and Annual Maintenance of "Shared Unique Number" Numbering System Among Arizona Universities and Community Colleges (annual maintenance costs would begin at the end of the 12-month implementation period).		
Item	In-Kind Contributions	Additional Funding
University Faculty	$ 1,122,188	$ 437,250
CC Faculty	$ 1,273,005	$ 497,610
University Staff	$ 253,125	$ 123,750
CC Staff	$ 438,750	$ 219,375
APASC Staff	$ -	$ 162,000
Total:	**$ 3,087,068**	**$ 1,439,985**
Annual Maintenance	**NA**	**$ 162,000**

SELECTED OPTION FOR ARIZONA

The Joint Council of Presidents reviewed the two models described above during their meeting on November 12, 2010, and unanimously selected the *Shared Unique Number* (SUN) as the model to implement. The model provides clear benefits to students, can be implemented under existing structures, will be less disruptive to the curriculum development processes of the institutions, and will be less costly than the other model. Cost was a primary consideration, given the current financial constraints under which all of the institutions are operating; however, there was a consensus among the presidents that the SUN system would provide the flexibility the institutions need to respond quickly to the changing needs of their communities..

Implementation Plan

SNSC will serve as the statewide oversight committee for implementation. APASC will assume responsibility for maintenance of the system. January 2012 is the target completion date for the first phase of implementation. Progress will be reported regularly to the Joint Council of Presidents and a status report will be included in the 2010-11 annual report on transfer articulation.

The following steps and estimated timeline are anticipated for implementing the system:

TASK	**TIMELINE** **Anticipated completion**
A. Set up aztransfer.com	January-March 2011
B. Develop numbering protocols	April 2011
C. Input the 90 courses with direct equivalencies	May-June 2011
D. Create prototype; field test with students and other target users	Fall 2011
E. Review and determine equivalencies for the 114 courses that are not direct equivalents. Include in the SUN system.	September-December 2011
F. Launch and market system	January 2012

Appendix 1

SHARED COURSE NUMBERING COMMITTEE
of the Arizona Community Colleges and Universities

Steering Committee		
Institution	**Name**	**Title**
Arizona Board of Regents	Stephanie Jacobson, Co-Chair	Associate Vice President, Academic and Student Affairs
Maricopa Community Colleges	Maria Harper-Marinick, Co-Chair	Provost and Executive Vice Chancellor
ATASS	Michael Hensley	ATASS Business Analyst
Pima Community College	Suzanne Miles	Provost and Executive Vice Chancellor
Northland Pioneer College	Jeanne Swarthout	President
Arizona State University	David Young	Senior Vice President for Academic Affairs
Shared Numbering System Committee		
Arizona State University	Arthur Blakemore	Vice Provost
Arizona Western College	Joann Linville	Vice President for Learning Services
Central Arizona College	James Moore	Dean of Records and Admissions
Central Arizona College	Steven Gonzales (back-up rep)	Dean of Math, Communications and Learning Support
Cochise College	Verlyn Fick	Vice President of Instruction/Provost
Coconino Community College	Kathleen Corak	Vice President for Academic Affairs
Eastern Arizona College	Randall Skinner	Associate Dean Registrar
Maricopa Community Colleges	Andrea Buehman	Executive Director, Academic Affairs and Partnerships
Mohave Community College	Michael Rourke	Interim Dean of Instruction
Northern Arizona University	Karen Pugliesi	Vice Provost/Undergrad Studies
Northland Pioneer College	Mark Vest	Vice President, Learning and Student Services
Pima Community College	Suzanne Miles	Provost
University of Arizona	Gail D. Burd	Vice Provost for Academic Affairs
Yavapai College	Greg Gillespie	Vice President for Academic Affairs
Arizona Students' Association	David Martinez III	Government Affairs Director
Arizona Students' Association	Erin Hertzog	ASA Student Representative
MCCD Students	Amanda Carlson	Student

Appendix 2: 22 States and Common Course Numbering System (CCNS) Models

An initial step in considering a common course numbering system (CCNS) for Arizona is to examine what other states have developed. Information on each state is provided first, then they are grouped according to type of model.

State	Legislation	Year	Institutions Included	Courses Involved in CCNS	Websites
CA	SB 1415	2004	CCC system with involvement of CSUs, UCs, and private institutions	20 highest demand majors	http://www.asccc.org/C-id/index.html http://www.assist.org/web-assist/welcome.html
CO	HB 1237	1986	CO CC system (13 schools) later, 4 area voc ed schools	general education, CTE; lastly, remainder (more than 12,000 courses)	http://www.cccs.edu/cccns/ccnsindex.html
CT	CC Board	2000	CT CC system (12 schools)	all	http://www.commnet.edu/academics/ccn/
FL		1971	all public cc's and u's	all	http://scns.fldoe.org/scns/public/pb_index.jsp http://www.registrar.ufl.edu/catalog/programs/courses/scns.html
ID		1996	all public cc's and u's	90-100 general education courses	http://www.boardofed.idaho.gov/public_col_univ/credit_transfer.asp
IL	IAI		IL Eastern CC system (partial state)	GE crosswalk	http://www.itransfer.org/container.aspx?file=iai http://www.iecc.edu/catalog/PDF/14_General_Program_Information_pp46-52_032210.pdf
IN	HB1001	2005	Indiana University and Purdue University systems	"equivalent courses, including courses with the same course number and title, must count in the same way at all campuses within the system where the course is offered." This is an "equivalent applicability" system at the university level only.	
IA		2002	agreement between 15 comm. college presidents	all	http://www.kirkwood.edu/ccn crosswalk: http://www.kirkwood.edu/site/index.php?p=8178
KY	HB160	2010	KY Comm & Tech, College System (KCTCS): 16 colleges/68 campuses	all	http://www.kctcs.edu/News_and_Events/News_Articles/System_Office/Governor_signs_HB_160.aspx

State	Legislation	Year	Institutions Included	Courses Involved in CCNS Websites
MT		2007	MT university system	all undergraduate courses http://www.mus.edu/transfer/TI_Operational_Guidelines_081203.pdf crosswalk example (accounting) : http://mus.edu/transfer/CCN/quicksrch.asp?subj1=ACTG
NV	NBOR	1999	NSHE community colleges and universities	all baccalaureate degree courses http://system.nevada.edu/Chancellor/Academic-A1/CCN/history.htm_cvt.htm http://system.nevada.edu/Chancellor/Academic-A1/CCN/CCN-Guidelines.htm_cvt.htm
NM	SB161	2005	NMHE cc's and uni's	general education courses; NM's CCNS: http://hed.state.nm.us/cms/kunde/rts/hedstatenmus/docs/345396584-07-09-2008-14-55-24.pdf
NC	UNC & NCCCS boards	1996	58 community colleges	all; phase in process: 1 general education, 2 major courses, 3 remainder established a Combined Course Library (CCL) of 3,800 courses; NC uses a 75% common course description model; 25% (the last sentence) is institutionally unique.
ND			NDUS, tribal colleges, and private colleges	500 courses; crosswalk shows common courses then the credits of each course at 13 institutions http://www.ndus.nodak.edu/students/ccn/matrix/default.asp
OR	HB2913	1987	colleges and universities	all http://www.ous.edu/state_board/jbac/
SD	SDBOR	2005	six universities: GE	uses SCED (School Codes for the Exchange of Data); SD Department of Ed also developing CCNS: http://doe.sd.gov/educationonline/2010/May/art_1.asp
TN	Complete College TN Act	2010	community colleges	http://www.csus.edu/ihelp/PDFs/Complete%20College%20Tennessee%20Act.pdf
TX		1973	community colleges	community colleges utilize the Texas Common Course Numbering System (TCCNS): lower division courses; the universities show their equivalent courses in a matrix and include the TCCNS parenthetically in their catalogs. http://www.tccns.org/ccn/history.asp
UT	HB 320	2004	USHE institutions: cc's and universities	general education courses http://www.utahsbr.edu/policy/R470.pdf
WA	State Board	2008	34 cc's and technical Institutions	"academic transfer" courses; courses have 4 digit prefix with an ampersand (&); crosswalk shows old and new numbers http://www.sbctc.edu/college/e_commoncoursenumbering.aspx

State	Legislation	Year	Institutions Included	Courses Involved in CCNS	Websites
WV	HB 2489	1993	universities, state colleges, community colleges	a "CEG approach" for matching courses	WV University Transfer Course Equivalency Guide: http://tes.sa.wvu.edu/
WY	21-17-108	1991	1 university and cc's	legislation charges the university and Wyoming Community College Commission	http://www.communitycolleges.wy.edu/business/AdminDocs/WYCrsIDPrcdrsMNL07WCCC.pdf

An analysis of these states reveals that four different models are in use: (1) a Course Equivalency Guide "CEG" model, (2) a "supra-numbering" or "virtual" model, (3) a "cross-walk" model, and (4) same course "prefix, number, and title" model; the fourth model had three variations of institutional involvement (community colleges only, universities only, and community colleges and universities together). The 22 states are aligned according to these models:

"CEG" Model	"Supra-Numbering" Model	"Cross-walk" Model	"Same Prefix, Number, and Title" Model		
			CC's Only	Uni's Only	CC's and Universities
West Virginia	Illinois (partial state system)	Texas	Colorado	Indiana	California
			Connecticut	South Dakota	Florida
			Iowa		Idaho
			Kentucky		Montana
			North Carolina		Nevada
			Tennessee		New Mexico
			Washington		North Dakota
					Oregon
					Utah
					Wyoming

7-12-10; revision 11-29-10

Appendix 3

Arizona Courses for Consideration in Numbering System

SB 1186 has defined the courses to be included in the shared numbering system as those which satisfy the requirements for the Arizona General Education Curriculum (AGEC) and common major requirements for equivalent majors. Over 200 courses were identified for analysis and to estimate costs as described below.

AGEC Courses

The AGEC is comprised of 35 credits with courses from the following disciplines:

- FRESHMAN COMPOSITION: a one-year lower division English Composition sequence.
- MATHEMATICS: College Mathematics with Applications for Arts; Brief Calculus for Business, and Calculus I for Science.
- ARTS AND HUMANITIES (A&H): art, dance, humanities, literature, music, philosophy, religion, theatre arts, or western civilization.
- SOCIAL AND BEHAVIORAL SCIENCES (SBS): anthropology, economics, ethnic/race/gender studies, history, political science, psychology, cultural geography, linguistics, or sociology.
- PHYSICAL AND BIOLOGICAL SCIENCES (PBS): astronomy, biology, botany, environmental science, chemistry, geology, physics, physical geography, or zoology.

Common Major Requirements

The common courses for majors are offered in 38 disciplines:

Administration of Justice Studies	Humanities*
Allied Health/Health Related Professions#	Journalism and Media Arts
Anthropology *	Languages
Art* and Fine Art	Mathematics*
Biology *	Music*
Business	Nursing
Chemistry *	Nutrition
Communication	Parks & Rec, Tourism and Nonprofit Management
CIS and Computer Science	Philosophy*
Early Childhood Education	Physics, Physical Science & Astronomy*
Economics*	Political Science*
(Elementary) Education	Psychology*
Engineering	Religious Studies*
English*	Social Work
Ex Sci, Kinesiology, PE, Health & Wellness	Sociology*
Family Studies & Consumer Sciences	Special Education (included in Education)
Geography *	Technology
Geology*	Theatre Arts*
History *	Women's Studies

19 common course disciplines are also AGEC categories (*)

Selecting Courses for analysis: The AGEC databases of the ten community college districts contain hundreds of courses, some of which are unique to some institutions, and others which all institutions have in

common. Since the intent of the legislation is to implement a numbering system which is *shared,* AGEC courses were included that are in common among at least three community college districts.

Since legislation call for "courses which satisfy . . . the common major requirements for equivalent majors, " ***all the common courses*** have been included in the analysis.

Using this approach, the shared list yielded **204** courses. Of those 90 are directly equivalent to courses at the universities; the remaining 114 transfer but as departmental or general electives to at least one university. This analysis was used to complete the cost analysis.

List of 90 Directly Equivalent Courses

English Composition I	Social Problems	Introduction to Retailing
English Composition II	General Biology I	Journalism/Newswriting
College Algebra	General Biology II	Beginning French I
Discrete Mathematics	Anatomy and Physiology I	Beginning German I
Calculus I	Anatomy and Physiology II	Beginning German II
Calculus II	Microbiology	Beginning Italian I
Calculus III	Fundamental Chemistry	Beginning Italian II
Differential Equations	General Chemistry I	Intermediate Italian I
Art History I	General Chemistry II	Intermediate Italian II
Art History II	General Organic Chemistry I	Beginning Japanese II
Humanities II	General Organic Chemistry II	Intermediate Japanese I
Introduction to Philosophy	Introduction to Geology I	Beginning Latin I
Introduction to Logic	Introduction to Geology II	Beginning Latin II
Ethics	General (College) Physics I	Intermediate Latin I
Philosophy of Religion	General (College) Physics II	Intermediate Latin II
World Religions	Introduction to Criminal Justice	Beginning Russian I
Eastern Religions	The Police Function	Intermediate Russian I
Principles of Drama (Dramatic Structure)	The Correction Function	Intermediate Russian II
Macroeconomics	Procedural Criminal Law	Beginning Spanish I
Microeconomics	Drawing I	Beginning Spanish II
US History II	Financial Accounting	Intermediate Spanish I
US Government/Politics	Managerial Accounting	Intermediate Spanish II
Comparative Politics/Government	Legal Environment of Business	Music Theory III
World/Global Politics	Introduction to Communication	Music Theory IV
State and Local Government	C# Programming	Introduction to Nonprofit
Research Methods	Systems Analysis	Introduction to Tourism
Personality	Computer Science I	New Testament
Social Psychology	Computer Science II	Old Testament
Introduction to Sociology	Nutrition, Health, and Safety	Intro to Social Work
Racial/Ethnic Minorities	Introduction to Engineering Design	Soc Ser Delivery System

List of 114 Courses

College Mathematics
Pre-Calculus
Finite Mathematics
Brief Calculus
Math for Elementary Education Majors I
Math for Elementary Education Majors II
Introduction to Statistics
Humanities I
Introduction to Literature
American Literature I
American Literature II
English Literature I
English Literature II
World Literature I
World Literature II
Literature of the Bible
Literature of the American Southwest
Folklore
Women's Literature
Music Appreciation
Jazz History
Theatre Appreciation
Introduction to Physical Anthropology
Cultural and Social Anthropology
Introduction to Prehistory
Principles of Archaeology
Native American Studies
Indians of the Southwest
Archaeology of the Southwest
US History I
Western Civilization I
Western Civilization II
Women in US History
Political Ideologies/Ideas
US and Arizona Constitutions
Introduction to Psychology
Measurement and Statistics
Developmental Psychology

Human Sexuality
Introduction to Human Geography
World/Regional Geography
Introduction to Language/Linguistics
Sociology of Gender
Marriage and the Family (Sociology)
Introduction to Astronomy
Biology Concepts
Plant Science
Environmental Science/Biology
Fundamental Organic Chemistry
Environmental Geology
Planetary Science
University Physics I (Mechanics)
University Physics II (Electricity & Mag)
Physical Geography
Substantive Criminal Law
Criminology
Two-Dimensional Design
Three-Dimensional Design
Business Statistics
Public Speaking
Small Group
Introduction to CIS
Digital Logic
Assembler/Architecture
Child Development (ECE)
Children's Literature
Foundations of SEI
Introduction to Education
Multicultural Awareness in Education
Introduction to Special Education
Human Development
Child Development (FSCS)
Marriage and the Family (FSCS)
Visual Merchandising
Media and Society
Introduction to TV and Radio

Introduction to Production
Begin Am Sign Language I
Begin Am Sign Language II
Inter Am Sign Language I
Inter Am Sign Language II
Beginning Chinese I
Beginning Chinese II
Intermediate Chinese I
Intermediate Chinese II
Beginning French II
Intermediate French I
Intermediate French II
Intermediate German I
Intermediate German II
Beginning Japanese I
Intermediate Japanese II
Beginning Navajo I
Beginning Navajo II
Intermediate Navajo I
Intermediate Navajo II
Beginning Russian II
Music Theory I
Music Theory II
Principles Human Nutrition
Leisure & Quality of Life
Leisure Delivery Systems
Program Planning
Recreational Leadership
Introduction to Christianity
Judaism
Acting I
Acting II
Directing
Intro Design/Scenography
Theatre Technology
Gender Identity
Intro to Women's Studies
Women and Religion