BRINGING DOWN THE SILOS

A Primer on Credit Transfer and Student Mobility

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Contents

FOREWORD

Eric D. Fingerhut, Chancellor, Ohio Board of Regents

Easy credit transfer and accelerated student mobility are the cornerstones of the University System of Ohio. They provide all citizens – newly minted high school graduates as well as returning adults – with a clear pathway for gaining the skills and knowledge necessary for productive and satisfying performance in the 21st century economy.

The Ohio Credit Transfer System was initiated by the Ohio General Assembly so that all students could know in advance the courses and programs guaranteed to transfer and apply to their degree programs. This includes the general education component as well as the prerequisite and beginning courses in students' majors.

Creating and implementing an effective credit transfer system is hard work – a fact that is confirmed by this primer. Those who tackle this task should be prepared for the "long haul." Improved student mobility is not an "add-on" and it cannot be achieved by tinkering at the edges. A comprehensive system of student mobility requires a transformation of a state's P-16 system.

To be sure, credit transfer cannot be imposed from above. It must become not only a statewide imperative, but also an institutional priority. Accordingly, it is impossible to overstate the role of faculty in a credit transfer system. Faculty members are responsible for the higher education curriculum and are the stewards of their academic disciplines. Their leadership role in the development and review of courses is imperative for the success of a state's credit transfer process. In addition, faculty expertise in the implementation of transfer initiatives gives the process the creditability it requires.

More than half of today's college and university graduates attend two or more institutions. Therefore, they must know in advance the courses and programs guaranteed to transfer and apply to their certificate and degree programs. This is why the Ohio Board of Regents has worked collaboratively with institutions of higher education – in both the public and private sector – and with state lawmakers to implement the state's credit transfer system. As we go forward, the success of this initiative will depend on our determination to make credit transfer and student mobility a shared responsibility – and our commitment to engaging the state's extensive network of universities, colleges and adult career centers in ways that benefit all Ohioans.

PREFACE

Bringing Down the Silos is Ohio's Articulation and Transfer story. It tells how one state – over a period of two decades – has grappled with the critical issue of credit transfer, and what that state did to increase student mobility. It confirms the importance of transfer pathways that are guaranteed, the value of using technology wherever possible, the crucial role of advising and the benefits of effective and determined leadership.

Ohio's story is told not as a prototype for all to follow since there are clearly many avenues that can be taken to facilitate student mobility. Rather, it is offered as a useful guide full of insights and possibilities for those engaged in similar activities. In addition, it is presented as an example of how a state can go beyond the traditional notion of transfer as a movement from community college to university to encompass a model that connects high schools, adult career centers, colleges and universities and the workplace in credit confirmation and guaranteed transfer.

The primer is divided into six chapters. The first provides an overview and history of Ohio's credit transfer efforts. It covers a number of topics that are, in this model, essential for a viable and effective transfer agenda. It also offers a perspective on the benefits of legislative leadership, written by a prominent lawmaker who made credit transfer a personal priority.

Chapter Two examines a number of key concepts, such as the notion of "equivalencies" that provides the foundation for transfer, and explores in detail the development of "tools" that assist credit transfer. The chapter focuses on how the these tools work to provide and facilitate the transfer of curricular components such as General Education, courses in the major and even career-technical programs. It also presents a perspective from the two-year college level, written by a president who has provided leadership for Ohio's transfer work for 20 years.

Chapter Three details how technology plays a significant role in the transfer process and the sending and receiving of student transcripts. The centerpiece of this "technology backbone" is the Articulation and Transfer Clearinghouse that is currently being implemented to match courses for a student between the sending and receiving institution, just as it is providing the transfer guarantee. The chapter also contains a perspective on institutional leadership, written by the former president of a public university in Ohio and co-chair of the Articulation and Transfer Advisory Council.

Chapter Four addresses the function of student advising, emphasizing the importance of and challenges associated with an effective advising system. Technology is increasingly finding a larger role in e-advising.

Chapter Five shares a few lessons – some of which were learned the hard way – through the eyes of Yogi Berra. Hopefully, these lessons will be helpful to those individuals and states that are committed to improving their own credit transfer and student mobility systems.

Finally, Chapter Six provides some thoughts about the next steps on the student mobility continuum and how they may evolve. It also advances some ideas about how the next phase of education improvement can be enhanced by making the equivalency of knowledge, credit transfer and improved student mobility a priority.

INTRODUCTION

Confronting Reality: The New World of Student Mobility

Like so many other aspects of life in the 21st century, the college experience is undergoing a transformation. The forces shaping postsecondary learning in today's world are powerful. Workplace demands for higher levels of education are escalating, and work readiness is increasingly being defined by national and international standards. Employer expectations are higher than ever before – and rising. Aspirations for advanced learning are growing among all segments of our citizenry. The knowledge economy is driving people "back to school" for additional training. In addition, technology is breaking down geographic and financial barriers to advanced levels of learning.

It is no wonder, then, that there are so many ways in which "going to college" today is different than it was in years past. Some young people are getting a jump on college by taking college-level courses before they even graduate from high school. Increasingly, college education is being delivered in locations away from campuses and beyond the walls of traditional classrooms, as the popularity of internships and other co-operative learning experiences grows. Adults are returning to the classroom to update and expand their skill sets – entering, moving through and departing the higher education system in patterns as various as their life and work situations. Thanks to distance learning technology, "going to college" may not involve going anywhere.

> *Today, more and more baccalaureate-seeking students enter the postsecondary pipeline through a two-year institution and the majority of those who earn a bachelor's degree attend multiple institutions along the way. It is important now more than ever that states develop effective policies to support the transfer of students and streamline credit transfer.*
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> *American Association of State Colleges and Universities, "Developing Transfer and Articulation Policies That Make a Difference," Policy Matters, July 2005.*

We also are a more mobile, fluid and adaptable society than ever before. We know that a rapidly-growing number of individuals earning college credits today are not beginning and ending their postsecondary experience at the same institution. Among those who obtain a baccalaureate degree from one of Ohio's public colleges and universities, approximately one-half have attended multiple public institutions of higher education in their academic careers. If private colleges and universities were added to the mix, the percentage would be higher. This is consistent with Clifford Adelman's national longitudinal studies that confirm that more than 60 percent of Americans who obtain a baccalaureate degree attend two or more institutions. More than 20 percent of these learners earn credits at three or more institutions.[1]

Promoting Access

A major component of transfer is the two-year to four-year progression, which given the role of community colleges in promoting access, provides a mechanism for increasing the baccalaureate attainment of low-income and minority students. As Jane Wellman has observed, "Community colleges, designed to promote access through open admission and low tuition, enroll proportionately more low-income students than any other sector of higher education." Wellman continues, "The strong correlation between race, academic preparation, and income means that these institutions enroll the largest proportion of students of color, particularly African-American and Hispanic students, as well as students from first-generation immigrant families."[2] In addition,

[1] Adelman, Clifford (2006). *The Toolbox Revisited: Paths to Degree Completion from High School Through College.* Washington, D.C.: Office of Vocational and Continuing Education. U.S. Department of Education. Also see Ewell, Peter (2008). *U. S. Accreditation and the Future of Quality Assurance.* Washington. D.C. The Council for Higher Education Accreditation.

[2] Wellman, Jane V. (August 2002). *State Policy and Community College-Baccalaureate Transfer.* The National Center for Public Policy and Higher Education And The Institute For Higher Education Policy.

community and technical colleges provide a low-cost option for at least the first two years of college and can provide cost-effective pathways to the baccalaureate degree.[3]

Most states are grappling with articulation and transfer issues, and it is important to acknowledge that the rest of the world is not standing still. The most recognized and comprehensive of these efforts is "the Bologna Process," which involves 46 European countries. The process is restructuring higher education systems – making them more similar by "harmonizing" European education.

One of the key elements of this work is the standardization of degree structures and content, which lends itself to ubiquitous transfer. It's an ambitious undertaking that dwarfs anything presently occurring in the "colonies."

This reality presents educators and policymakers alike with new challenges, including how to ensure that higher education stays relevant to a rapidly changing world and how to adapt instructional delivery to new education consumer needs. Other challenges include how to expand access while keeping college affordable for all citizens, and how to guarantee that credits students earn at one college or university in Ohio will count toward completion of a degree or credential at any other public institution of higher education in the state.

Why is Transfer So Challenging?

Credit transfer and student mobility are among the most perplexing issues facing the higher education community today. Students, families, employers and lawmakers cannot fathom why this issue persists – why students have to retake the same course again when transferring from one institution to another, or why students and the state have to pay twice.

Yet, the answers to these questions are not simple – and lasting solutions to the difficulties of credit transfer and student mobility will not be achieved by simply tinkering with the rules, roles and relationships through which credit is presently earned and applied for graduation.

It is no secret that most institutions of higher education prefer that students begin and end their studies on *their* campuses. As a consequence, transfer students are not as highly valued as "home-grown" graduates. In fact, transfer students often are viewed as being academically inferior – not having received the same quality of instruction and not having benefitted fully from the institution's educational approach and philosophy.

Exacerbating this suspicion has been the historic lack of attention paid to the systemic alignment of course content and outcomes, regardless if the transfer is from a two-year college to a university or the reverse. This being the case, both colleges and universities are often unsure of the validity of coursework being transferred. It is suspected that the autonomy of Ohio's colleges and universities has contributed substantially to this mind-set.

A statewide system of student mobility is a necessity and requires bold action to change the way institutions operate. The silos that separate institutions must be replaced by a new sense of certainty about how credits are transferred and applied to degrees or certificates. And this is no easy task!

Ohio's Experience

For almost two decades, the vision of a statewide system of student mobility has driven Ohio's "articulation and transfer" initiatives, which have been designed to promote student mobility by guaranteeing that certain courses can be transferred and applied to degrees and certificates in multiple disciplines at other two- and four-year postsecondary institutions.

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[3] For an in depth discussion of the path from two-year to four-year colleges and other credit transfer issues, see William G. Bowen, Matthew M. Chingos and Michael S. McPherson, *Crossing the Finish Line: Completing College at America's Public Universities.* Princeton, New Jersey: Princeton University Press, 2009, especially chapter 7.

Ohio's story reflects a commitment to radical changes in our culture of learning and in our thinking about credit transfer that historically have been institutionally focused, not *student centered.* It is built on a belief that traditional credit transfer practices serve as a barrier for students wanting to improve their knowledge and skills, particularly adult workers with credits from multiple institutions. These practices may discourage learners from beginning at lower cost, more convenient institutional options.

Ohio's story is driven by an understanding that historic policies and practices inhibit quality, multi-institutional advising due to widespread uncertainty about what credits really count in transfer. And it confirms that these policies and practices restrict student mobility at a time when a credit transfer system that encourages college participation is most needed.

Finally, Ohio's story is grounded in a clear recognition that the challenges of credit transfer are going to grow in the years ahead. Increased numbers of students, both traditional and non-traditional, continue to seek to advance educationally while attempting to constrain costs. As more and more young people pursue opportunities to earn college credit before receiving their high school diplomas, the lines between secondary and postsecondary education will continue to blur.

Ohio as a Model

This primer shows how one state – with education policy leaders working in partnership with state legislators, educators and other stakeholders – is meeting this challenge. To be sure, Ohio's experience is only one state's story. Yet, this story offers substantial insight and possibly a model for the higher education community, state lawmakers and advocacy groups elsewhere – even though its ending is still being written. Efforts continue in order to create an academic and workforce education environment that gives all Ohioans access to an effective, customer-friendly credit transfer system.

This brief document offers no foolproof recipes and some of the lessons learned in Ohio may not find application elsewhere. Yet, readers of these pages will find helpful insights:

- The value of developing and executing a comprehensive approach to credit transfer and student mobility.
- The need to address the interests of multiple audiences.
- The importance of giving students the timely and accurate information they need to navigate their chosen paths, making effective use of available technologies, and engaging institutional leaders as innovators and champions of change and as advocates for a new, more open culture of learning.

Again, this primer is just that, a continued conversation around student transfer. It is another set of credit transfer experiences to share with those engaged in the ongoing dialogue and initiatives around increasing student mobility. Some readers will be content with the first chapter overview and history of Ohio's journey. Others will want to consult the other chapters for a more in-depth background and tools regarding how courses transfer, how technology facilitates credit transfer, and how advising plays a pivotal role in the whole process.

CHAPTER ONE

Student Mobility Policies and Practices

In pursuing a college education that leads to a postsecondary degree or credential, Ohio students have lots of choices. They can start at a two-year community or technical college – or for that matter, at an adult career center – completing their studies there or transferring later to a four-year institution. They can take courses at two- or four-year institutions. They can begin college at a four-year institution, later deciding to transfer to a two-year community college. Or they can choose to be concurrently enrolled, taking courses at two or more institutions at the same time.

This kind of student mobility has many benefits. It reflects the advantages of a robust, diverse system of higher education that offers a great deal of choice regarding the path to a specialized credential or college degree. But it also entails risks in that it assumes that credits can be transferred from one institution to another. Historically, that has not always been the case, as institutions have often chosen – sometimes for valid reasons – not to recognize course credits earned elsewhere.

Each year, approximately 40,000 Ohioans transfer within the state's public system of higher education. Frequently, they have done this through bilateral agreements between two institutions of higher learning. Increasingly, today, they use the state's emerging system of credit transfer, and they rely on a growing body of timely and accurate information that helps them navigate their chosen path to a college degree or credential.

This is what Ohio's articulation and transfer story is all about. It is about redesigning institutional prerogatives to support the state's needs – more specifically, to build the state's intellectual capital and meet employers' workforce needs. It is about bringing down the silos that too often have stood in the way of students' efforts to earn the postsecondary credentials that lead to better jobs and higher incomes – and that attract new businesses to the state while creating opportunities for those already here to flourish.

The silos are coming down. The way students are learning is changing. The way colleges and universities are supporting and facilitating student mobility is being transformed. The two primary sources of this change are: (1) a public policy solution initiated by state legislators in 1988; and (2) a new culture of learning that values student mobility and incentivizes colleges and universities to support it.

> *"The Ohio Board of Regents shall establish a study commission to make formal recommendations to the Governor and the 118th General Assembly regarding implementation of a statewide student credit-hour transfer agreement to address the articulation problems associated with students transferring from state-assisted technical and community colleges to state-assisted universities. The recommendations of the study commission shall be submitted by the Board to the Governor, the Speaker of the House of Representatives, and the President of the Senate no later than January 5, 1990."*
>
> *Am. Sub. SB 268, 118th General Assembly*

Let's begin with the public policy solution.

Ohio's credit transfer and student mobility reforms can be tracked to state legislators' call, in 1988, for a study commission to look at the barriers to credit transfer when students move from one postsecondary institution to another. Very simply, the Ohio General Assembly directed the Ohio Board of Regents to develop a statewide mechanism to allow students to transfer credits when they move from state-assisted technical and community colleges to state-assisted universities.

Within weeks of the state legislature's action, the chancellor of the Ohio Board of Regents established a 21-member Commission representative of public colleges and universities, working with Regents' staff, to address the critical issues that limited credit transfer. The Commission's draft action recommendations, contained in "The Ohio Articulation and Transfer Policy," which the Board adopted in November 1990, were grounded in three important ideas:

1. Transfer and native students should be assured equitable consideration and treatment by each college and university.
2. Students who began their collegiate studies at a community college or university regional campus should be encouraged to complete an Associate of Arts or Associate of Science degree before transferring to a baccalaureate institution.
3. Institutional autonomy and integrity for the General Education program at each college and university should be assured.

With the introduction of this third notion about institutional autonomy and integrity, it is important to ensure that readers fully understand the nature of Ohio's system of higher education. Prior to Governor Strickland's issuance on August 2, 2007 of an Executive Order creating the University of System of Ohio, the state did not have a fully integrated, coordinated higher education system from GED to Ph.D. Unlike the "systems" found in New York, California, Wisconsin, North Carolina and other states, Ohio's traditional system of higher education featured colleges and universities with substantial autonomy and independent boards of trustees responsible for institutional policies and operations. Until 2007, the Ohio Board of Regents was a coordinating board with limited authority.[4]

> *"... the University System of Ohio, which represents a new, cooperative framework for public higher education. For too long, Ohio has been ill-served by competition between institutions for students and resources, rather than the collaboration that would benefit all Ohioans."*
>
> *Governor Strickland in Strategic Plan for Higher Education, 2008-2017 (2008)*

The old system had both its defenders and critics. It had something else – a legacy of independence that often made it difficult for institutions to work together, to coordinate their policies and practices, or to set aside their own priorities and prerogatives for the interests of the students and the state they jointly served.

To be sure, when it came to student mobility and the application of credit across public colleges and universities, there were bilateral agreements – and many students were able to transfer credits without difficulty. But agreements that drew only two institutions together and lacked the backing of a statewide transfer policy often didn't work for many students.

Establishing the Transfer Apparatus

The Ohio Board of Regents' acceptance of the Committee's recommendation opened the door to the first phase of Ohio's articulation and transfer story. Yet, at that moment, few people fully recognized how sweeping and far reaching the changes would be. They understood that the rules, roles and relationships that defined credit transfer would have to be modified, but they didn't appreciate the depth of the cultural changes that lay on the horizon. Even fewer people anticipated the critical roles that ultimately would be played by the creation of the Ohio *Transfer Module (TM)* and the *Articulation and Transfer Advisory Council.*

> *The Regents' creation of the Articulation and Transfer Advisory Council was a crucial step in developing Ohio's credit transfer agenda. The Council is a powerful force in advocating transfer across all campuses and in carrying out state policy.*
>
> *Initially, the Council was composed of representatives from all of the state's public colleges and universities. Yet, today, its membership includes the state association of independent colleges and universities, K-12 school districts and adult career programs. It is co-chaired by the presidents of a public university and a community college.*
>
> *Originally, the Council met numerous times during the academic year. Now, the Council needs to meet only twice a year. An "Oversight Committee", which functions as an executive committee, meets more frequently*

[4] The Ohio Board of Regents' functions were largely limited to the distribution of funding through formulas, the approval of academic programs and new initiatives developed through campus consensus.

Courses associated with the General Education component often are problematic in the credit transfer process. These are pre-major core courses that provide the academic foundation for further work; obtaining needed analytical skills; expanding cultural, aesthetic, scientific and philosophical perspectives; and developing learning and communication tools.

One of the primary purposes of General Education is to provide students with the foundation for later learning in their major fields of study and to ensure preparation for active and thoughtful civic engagement. All colleges and universities have an extensive General Education component. Given General Education's centrality in the curriculum, as well as the fact that students take the majority of these courses in the first two years of college, the focus of credit transfer reform was on this component. For this purpose, the creation of a general education Transfer Module for every public college and university was the first giant step forward.

The Transfer Module

The Transfer Module is the set or subset of a college's or university's General Education requirements. It represents a body of knowledge and skills common across Ohio's public higher education institutions. It reflects a set of comparable and compatible learning experiences during the first two years of most students' collegiate education.

Working in concert with colleges and universities, the Ohio Board of Regents first established an agreed upon General Education core consisting of 54-60 quarter hours, or 36-40 semester hours, common to all institutions (or at least agreed upon). The General Education hours are in the fields of (1) English and communication, (2) mathematics, (3) arts and humanities, (4) social and behavioral sciences, (5) natural and physical sciences, and (6) optional interdisciplinary coursework. The Commission established to address the original legislative charge was the same body that recommended the structure of the Transfer Module to the Regents. At the time (1990), it represented the existing general categories and hours across the public higher education system.

The TM is an ingenious means by which students who have completed their General Education courses can move them to another college or university and take the place of the receiving college's own Transfer Module. It gives them a ***guarantee*** – the certainty that General Education credits will be transferred and will apply as "general education courses" when they move to another public college or university in Ohio. (NOTE: As we will see below, the original rule that a student's entire Transfer Module of General Education courses had to be completed for the guarantee to apply has been changed. This issue will be addressed later.) When the student completes the total TM, an official notification is applied to the transcript prior to transfer to inform the receiving institution that the Transfer Module has been completed.

The Transfer Module Faculty Committee reports to the Articulation and Transfer Advisory Council. The committee has played an important role in developing the state's credit transfer system. Today, it is continuing to evaluate the performance of the General Education component. Ohio is fortunate in that the co-chairs (one from a university, The Ohio State University, and the other from a two-year college, Terra Community College) have been in this role for many years and provide recognized leadership.

Faculty committees in each of the required General Education disciplines serve a crucial role in the review approval of the Transfer Modules. Faculty members are nominated by colleges and universities to serve terms on the different disciplinary panels. The faculty provides the discipline expertise and knowledge base required to make sound judgments.

They also provide a communication channel with colleges and universities and faculty groups in adjudicating disputes and in ensuring currency of structure and content. Without the faculty "oversight" and active involvement, implementing the Transfer Module would be difficult – and it would lack the academic validation required for success.

The example of the TM's structure below highlights the areas of General Education that are specific and required (A), as well as the additional hours required that are not specific (B). In addition, there is a category for interdisciplinary work (C) that provides flexibility for campuses. The purpose of the last column, General Education Requirements Beyond the TM, is simply to provide information regarding the General Education that must be completed for the baccalaureate degree at the receiving institution. (Chapter Two will provide a completed Transfer Module with the appropriate courses in each column.)

No longer would students need to worry about course-to-course comparisons or equivalencies. Their Transfer Module would take the place of the receiving institution's TM. It's efficient. It's innovative, and it's guaranteed!

Transfer Module Format

___ Semester ___ Quarter Effective Date: _____

Areas	(A) Minimum General Education Requirements Applied to the TM (24 semester or 36 quarter hours)	(B) Additional General Education Requirements Applied to TM (12-16 semester or 18-24 quarter hours)	(C) Interdisciplinary Hours Applied to TM within Areas I-V (optional)	General Education Requirements Beyond the TM for Graduation (courses listed in this column are not guaranteed to transfer)
I English/Oral Communication (minimum 3 semester or 5 quarter hours)				
II Mathematics, Statistics or Formal Logic (minimum 3 semester or 3 quarter hours)				
III Arts & Humanities (minimum 6 semester or 9 quarter hours)				
IV Social Science (minimum 6 semester or 9 quarter hours)				
V Natural Science (minimum 6 semester or 9 quarter hours, with one lab course required)				
Sub-Total of Hours				

Here's how the credit transfer process worked when it was initially introduced.

- Each public college and university submits its General Education Transfer Module to the Regents for review by faculty panels according to the specific criteria in each of the specified disciplines.
- Upon review and approval of the TM, the institution is in compliance with the Articulation and Transfer Policy and can guarantee the hours (54 to 60 quarter and 36 to 40 semester hours) in the TM will transfer to every public institution, and take the place of the receiving institution's TM.
- Originally, the whole transfer module had to be completed for the guarantee, which didn't apply if the entire TM was not completed. Yet, courses could continue to be approved by the receiving institution on a course-by-course basis without the guarantee. This had unique implications for technical two-year colleges since they focus on applied degrees (such as the associate of applied science) for the purpose of preparation for entry into the workforce, and they do not offer the entire TM; accordingly, students in these institutions did not have the benefit of the transfer guarantee. In the initial transfer policy, the TM was applicable for the Associate of Arts and the Associate of Science degrees that are designed, in part, for transfer and generally parallel the first two years of coursework for the baccalaureate degree.

The Articulation and Transfer Advisory Council

Having a statewide credit transfer policy and ensuring that it operates effectively are two different things. The responsibility for closing the gap between design and performance was largely the responsibility of the Board of Regents' Articulation and Transfer Advisory Council, which consisted of representatives from each of the state's public colleges and universities. Council members play two important roles – first to provide liaison between the Regents and their institutions, and second, to serve as spokespersons and facilitators for the state's credit transfer policy.

Early in the process, the Council's initial activities focused on reviewing and approving each institution's TM and on implementing the Regents' policy directives. More specifically, the Council:

- Formed the Transfer Module Committee and subcommittees to review and approve each institution's module against state standards.
- Supported regional transfer organizations to promote and provide information about transfer opportunities.
- Developed a host of communication strategies and tools to inform students, as well as colleges and universities, about the new policy and its guarantees for credit transfer.
- Ensured that all campus bulletins and course catalogues included the state's transfer policy requirements, including institutions' approved Transfer Modules.
- Worked with Miami University (in collaboration with Arizona's Board of Regents) to implement a new Course Applicability System (CAS), now known as u.select under the new organizational umbrella of redLantern, which provides an online mechanism for transfer advising and credit transfer equivalencies.[5]
- Formed "impact committees" to visit institutions to assist with policy implementation and to ensure adherence to state policy (and ultimately to generate action recommendations for the Articulation and Transfer Council).
- Monitored policy implementation and developed recommendations to encourage student mobility throughout the state's system of higher education.

[5] CAS, which is now known as u-select, will be explored further in Chapter Four.

The significance of this new public policy solution and the practices it ushered in should not be underestimated. Yet, the "cultural shift" it spawned – institutions' acceptance of students from other colleges and universities and the emergence of a *transfer system* committed to meeting the needs of the state and its citizens – has had effects that are even more far-reaching. Today, there is an understanding and acceptance of the notion that transfer students should have the same rights and opportunities as institutions' native students. Additionally, there is a spreading sense that General Education experiences should be comparable across all institutions.

To the surprise of many people, traditional perceptions of transfer as something to be avoided – clearly not an institutional priority – are being supplanted by policies and practices that encourage, or at least facilitate, student mobility. In fact, many of Ohio's colleges and universities are now offering transfer scholarships. It's been a quantum leap forward for institutions and students alike, and it has required massive education, ongoing communication, and the determined support of institutional leaders for Ohio's new transfer guarantee.

More Policies and Tools for Credit Transfer

Ohio's innovative approach to credit transfer has benefited students in a number of ways. First, substantial barriers to credit transfer and student mobility have been lowered. Second, students have been increasingly successful in moving their General Education credits from institution to institution. Third, bi-lateral agreements and regional compacts have become increasingly popular, reflecting the regional nature of most student mobility. And finally, the rules and relationships governing credit transfer have been given greater credibility by a statewide system and the oversight of the Articulation and Transfer Advisory Council.

While student transfer in Ohio represents a significant number, it is not sufficient grounds to declare that Ohio's articulation and transfer agenda has been completed. In fact, in the years since the adoption of the state's original articulation and transfer policy, the system's effects have been confronted by changes in the nature of General Education and by difficulties in extending the transfer guarantee to all students. It was recognized that more innovation was required to increase student transfer among higher education institutions.

As early as 2000, the Articulation and Transfer Council developed a *second horizon* – the next stage in increasing credit transfer through policy implementation that recognized that additional student mobility through a more precise and extended advising system would require continuous actions by the Board of Regents, individual institutions and students.

Bi-lateral Agreements

Usually between two institutions, these agreements facilitate the transfer of specific credits, in most cases involving specific programs. Most public and private colleges and universities have a variety of bi-lateral agreements that promote regional student transfer. Such agreements should be encouraged and expanded since they provide students with another avenue and level of credit transfer.

To continue accelerating the articulation and transfer agenda, the Council established two broad-based subcommittees to assess and accelerate the system's performance. First, the *Impact Subcommittee,* comprised of peer volunteers from colleges and universities along with Regents staff, visited the vast majority of campuses to review compliance with the Articulation and Transfer Policy – and to function as a "friendly critic" regarding campus transfer operations. These visits produced a great wealth of information about the continuing barriers to transfer and provided directions for the Council to pursue.

During the initial years of the initiative, a campus-based survey was administered by the Regents to assess the level of compliance with the articulation and transfer policy. However, this survey exercise did not provide the in-depth information that was needed, and depending on who completed the survey at the campus level, sometimes provided conflicting data. Therefore, the subcommittee's peer-review visits focused on the effects, to date, of the state's new Articulation and Transfer Policy and on persistent campus-level barriers to student mobility. It soon became obvious that additional strategies were required to increase transfer while also encouraging more robust student advising.

Second, the *General Education and Applied Degree Subcommittee* advanced a number of action recommendations intended to make credit transfer more effective and to extend its reach to more students. One key recommendation allowed any course in the Transfer Module to transfer and apply without the completion of the entire Module, the rationale being that all the courses in each Transfer Module have already been reviewed and approved by the General Education faculty panels. This recommendation had particular significance for students working toward an Associate of Applied Science degree at two-year technical colleges, since the structure of the applied technology degree doesn't require a full General Education component as defined in the Transfer Module.

Another recommendation called for expanded student mobility options among public colleges and universities through the development of guidelines for the transfer of credits beyond the core General Education curriculum. These guidelines, which later would become TAGs (Transfer Assurance Guides) were intended to provide students a certain "roadmap" or pathway to the major for credit transfer.

> *... Develop and implement a universal course equivalency classification system for state institutions of higher education so that the transfer of students and the transfer and articulation of equivalent courses or specified learning modules or units completed by students are not inhibited by inconsistent judgment about the application of transfer credits. Coursework completed within such a system at one state institution of higher education and transferred to another institution shall be applied to the student's degree objective in the same manner as equivalent coursework completed at the receiving institution...*
>
> *ORC 3333.16 (enacted in HB 95)*

As the Council was pursuing its long view, state legislators were beginning to explore ways to expand credit transfer. Legislators had conducted visits to a number of campuses and the issue of transfer barriers continued to be raised. This, coupled with ongoing complaints from their constituents, led to legislation to – once and for all – deal with the "Gordian knot" of transfer. An early tenet held by many legislators was that the problem could simply be solved by developing a common-course numbering system that would make *all courses* transferrable.

While a common-course numbering system was considered, it was perceived as a deceptively simple solution to a complex curriculum issue – one that did not recognize the variation of course levels and interpretations of course content. Course numbering may have integrity at specific institutions, but this level of consistency often does not extend beyond college or university boundaries. Even at the institutional level, establishing a course level and number often is subjective – sometimes reflecting little more than the availability of numbers. Common-course numbering systems also may limit the innovation that is needed to keep courses current, or to create new courses, particularly in newly-emerging fields of knowledge.

In addition, implementing a common-course numbering system retroactively can be extraordinarily difficult – and it can take years to put in place in colleges and universities where perspectives have been shaped by decades of institutional autonomy. So the Board of Regents, in partnership with institutional leaders and state lawmakers, built on the foundational work on a TAG concept and called for a content-based *course equivalency system* – a more transformative approach that was used to drive transfer guarantees while providing reasonable autonomy for colleges and universities. Believing that this approach would benefit students more in the transfer process, this system was incorporated into permanent law in ORC 3333.16, enacted in House Bill 95 (2003).

> *If there's a lesson in Ohio's experience that is transferrable to other states and situations, it's the necessity of having direct and continuous involvement of campuses and faculty in the design and implementation of a credit transfer policy. Without this involvement, little progress will be sustained.*

Transfer Assurance Guides (TAGs)

TAGs are designed to provide more precise advising and designate courses that are guaranteed to transfer and apply to a major – and an undergraduate degree – in all Ohio public institutions of higher education. The TAGs represent a major step forward in credit transfer because they provide more precise student advising and offer a guarantee that the credits will apply to any of 38 majors with more being addressed at a later date. They identify the prerequisites and beginning coursework for these fields of study, which is important for both students and faculty. They build on the Transfer Module and, when taken together, respond to the intent of H.B. 95 by providing the state with a "universal course equivalency classification system" that provides guaranteed transfer of students and credits.[6]

The TAGs approach is critical to advising, directing and guaranteeing student mobility. It accelerates the amount of credit that is universal (i.e., credit that can be taken from college to college and applied to a major and a degree). It standardizes the process – without being unnecessarily restrictive – by ensuring that equivalent courses are structured around an agreed upon set of outcomes. This will be explained in more depth in Chapter 2.

TAGs are limited to the beginning set of courses in a major program of study, thus preserving and promoting institutions' distinctiveness and character in the upper division while keeping intact their residency requirements. At the same time, however, Ohio's universal course equivalency classification system promotes mobility by allowing students to plan degree programs and make institutional choices with certainty.

As with the Transfer Module, panels comprised of faculty from two-year colleges and universities provided the expertise and creativity in both design and operation of the TAGs. They developed outcomes for each course, focusing on quality and the level of competency required. For the first time in Ohio's history, this provided a common denominator – system wide – for college-level coursework. Once campuses, through a reiterative process, agreed to the outcomes, they could submit their courses to disciplinary faculty panels for review and approval.[7]

Together, TAGs, the Transfer Module and electives make most of the associate degree transferrable – and courses moved from one institution to another apply to the major and degree programs. The implications of this approach reach far beyond academics. They mean that students can begin their postsecondary experience with the lowest cost option or institution of convenience with the assurance that their work will transfer and apply within the state's system of public higher education. Student credit is never lost. The fluidity of this process forms the infrastructure of a system in which students are transferring from two-year college to two-year college, from two-year college to four-year university, from university to university, and sometimes from university to two-year college. Increasingly, the system includes independent colleges and universities that are continuing to develop their own transfer agreements – mostly bi-lateral in nature – even though the law does not require their participation.

Like the Transfer Module, faculty recommended from colleges and universities formed the TAG panels –often with co-chairs from a two-year college and a university. Over 600 faculty have been involved in the development, review and approval of the TAG courses. This has been quite an undertaking and requires commitment and engagement by the campuses.

[6] Knowing that the development of the TAGs would be controversial, the Oversight Committee of the Articulation and Transfer Advisory Council developed a set of guidelines for the development of the Transfer Assurance Guides. For more information about these guidelines, see Appendix A.

[7] Each public college and university submitted courses aligned to specific Ohio Articulation Numbers (OAN) representing the agreed upon set of outcomes for each course in the major.

Equating Programs to Course Credit

Building on their early successes, Ohio lawmakers, the Ohio Board of Regents and institutional leaders continued to expand students' transfer options, sometimes moving into new and uncharted areas. In 2005, lawmakers challenged the Ohio Board of Regents to establish criteria and practices for turning specific technical courses – for example, high school and adult career-technical time-delineated units – into college credits. Legislators' assumption was that such courses conform to recognized industry standards that are equivalent to the content of college-level courses.

Under the best of circumstances, this is difficult. It requires that time-defined educational experiences (e.g., a number of clock hours for an adult career-technical program) be transformed into a specified number of college course credits. In Ohio, the challenge was even greater because historically adult career-technical programs have been the responsibility of the Ohio Department of Education, not the Board of Regents.

That changed in January 2009 when these programs were shifted to the Board of Regents, pursuant to a directive from the Ohio General Assembly. In a new, more integrated environment, efforts to address the hours to credit quandary, as well as the cultural differences between K-12 and higher education, are moving forward.

To date, 17 career-technical assurance guides have been approved for differing amounts of transfer credits. The specific objective of the legislation was to establish policies and criteria that would make credit eligible, through transfer, for specific technical courses (high school and adult career-technical time-delineated units), which adhere to recognized industry standards that are judged equivalent to college level content.

This will significantly increase the opportunities for adult workers to have equivalent learning recognized for credit. It also provides an opportunity for high school students in technical areas to have courses in the industry-recognized credentials applied for college credit as well. Successful programs, like College Tech Prep, will benefit from having a consistent statewide approach to credit validation in technical courses. It also provides a mechanism for faculties (in college and high school technical programs) to collaboratively address the always-controversial area of curriculum duplication.

The same process is being applied to apprenticeship programs beginning with the electrical trade's apprenticeship, to determine outcome equivalencies for credit. This will especially impact significant numbers of the workforce who have entered their career through an apprenticeship model. The crux of the issue is being able to establish agreed upon outcomes at a rigorous level.

This phase of Ohio's student mobility agenda is significant since it provides a willingness and ability to move to competency matches rather than seat time or credit match. It can, therefore, be applied in most every situation where agreed-upon learning outcomes can be established.

> *Sec. 3333.162. (B) By April 15, 2007, the Ohio board of regents, in consultation with the department of education, public adult and secondary career-technical education institutions, and state institutions of higher education, shall establish criteria, policies, and procedures that enable students to transfer agreed upon technical courses completed through an adult career-technical education institution, a public secondary career-technical institution, or a state institution of higher education to a state institution of higher education without unnecessary duplication or institutional barriers. The courses to which the criteria, policies, and procedures apply shall be those that adhere to recognized industry standards and equivalent coursework common to the secondary career pathway and adult career-technical education system and regionally accredited state institutions of higher education. Where applicable, the policies and procedures shall build upon the articulation agreement and transfer initiative course equivalency system required by section 3333.16 of the Revised Code.*
>
> *House Bill 66 (2005)*

Using Technology to Advance Student Mobility

Credit quandaries and conflicting cultures were not the only obstacles that Ohio's student mobility initiatives had to overcome. Efforts to create a statewide system of credit transfer – at least on Ohio's scale – could not have been successful without the development and support of a sophisticated technology infrastructure that provides for the equivalencies and credit guarantees among all public colleges and universities. The individual course equivalencies just for the TAGs number in the thousands. To maneuver just this piece of the transfer system would require undo hardship on institutions to code and cross-code the equivalencies.

For this reason, Ohio's credit transfer team started early to develop an electronic system that would not only send and receive student transcripts, but also would "interpret" the equivalencies for course credit at the receiving institution. With the infrastructure, a transcript sent from institution A to institution B would be channeled through a clearinghouse that contained all the equivalency matches and guarantees, and would arrive at institution B – in just seconds – with that institution's courses and credits reflected by course number and title.

Today, this technology is beginning to perform the hard/routine tasks for a growing number of campus registrars while ensuring the guarantee for students. Already a number of public colleges and universities are connected to the Articulation and Transfer Clearinghouse and are currently sending and receiving transcripts.

The development of this clearinghouse requires a large investment of time and resources, but provides many benefits for the state's student mobility system. With the electronic transcript exchange and the use of the Clearinghouse, transfer can be instantaneous. Registrars, guidance counselors and students won't need to wait weeks for someone to review and make individual, subjective decisions on the application of credit. The transcript arrives in the registrar's office in seconds. The receiving institution's catalogue number and language that facilitate the guarantee are readily available for advisers to view and help the student continue his or her education. The Clearinghouse will, in essence, guarantee the course articulation agreements statewide. It also will provide a mechanism to gather vast amount of data on student mobility to improve transfer in Ohio.

Resources are Required

Ohio's student mobility system could not have been developed – and implementation could not have begun – without dedicated resources. This is not something that can be "added on" to the current work at the state or campus level – no matter how tempting the notion.

The Ohio Board of Regents has, since the initial articulation work, a small staff that directs the initiative from the state level. Staffing was added for the TAG development and implementation that included technology expertise for the Clearinghouse and other administrators to handle the growing workload and communication with campuses. The Board of Regents has benefited from the state legislature's continuing support for its credit transfer work with a budget line that facilitates staffing and program development.

Campuses also have invested resources in the credit transfer system. Numerous changes and modifications to courses and programs were necessary at the campus level to conform to the state policy. In fact, the process of reviewing, strengthening and approving courses may well be the biggest curriculum reform in Ohio's history.[8] Not surprisingly, then, faculty in large numbers have been involved in all aspects of the initiative. While necessary, it is also costly in terms of time and travel. The message is: Don't overlook the cost of system development.

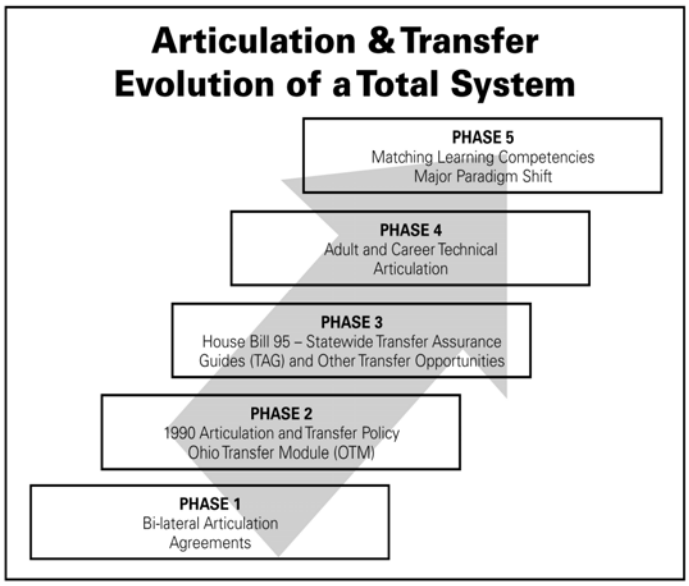
[8] At the campus level, for example, to align with the TAG outcomes necessitated the review by Lorain County Community College of 900 courses that resulted in either validation of the alignment or revisions of the course outcomes.

Conclusion: When Will All This End?

After years of hard work, one is tempted to lament, "When will all this – the course equivalencies, the curricular reviews and the transfer mandates – all end?" And the answer is, not soon, if ever.

The new credit transfer system is evolving. It is being extended to more students, more institutions more courses and more disciplines. Most importantly, it is working. Mobility is increasing for traditional students, high school students who take college courses before graduating, and returning adults. New questions about what merits credit – in terms of knowledge and skill expectation and the degree structures used to encase those experiences – are being addressed and answered.

As the new system was being developed, the rationale and need for Ohio's credit transfer initiatives were captured by then State Representative Shawn Webster as he reflected on many students' and families' surprise – and frustration – when they discovered that courses completed at one institution had little or no value when they transferred to another college or university. "In many cases," Webster recalled, "students found that college courses didn't meet degree requirements at their new institutions. Major-specific credits were not recognized. Nothing was guaranteed, except that mobility could result in a loss of time and money, as colleges defended their institutional prerogatives in the name of quality and autonomy."



The Ohio Board of Regents and its legislative and institutional partners have made substantial progress in addressing these issues. They have put into place a statewide system – or what is evolving into a statewide articulation and transfer system – that provides guaranteed transfer of students and credits. They have created the human infrastructure – more than 600 faculty were involved in developing the TAGs, specifying the expected outcomes and reviewing for compliance – and built the technology required to sustain a workable system.

In the next chapters of this primer, the details that allowed the challenges to be mitigated and contributed to this success will be explored. But first, it is important to make four points:

- The success of Ohio's student mobility initiative rests in part on the fact that education policy leaders, state lawmakers and educators never forgot that the real winners of any credit transfer effort are students – Ohio consumers of higher education. From the outset, Ohio's initiative put the student in the transfer driver's seat, developed guaranteed pathways, and provided electronic tools and advising services to help students navigate the system to achieve their highest educational aspiration.
- From the beginning, Ohio's initiative acknowledged that tinkering with the old approach was not the answer – that incremental changes would not do and that a whole new culture of student mobility was required. With that recognition, a bold, new strategy was developed and a concerted effort was made to engage campuses and faculty in the design and implementation of a comprehensive credit transfer policy.
- Policymakers at both the state and institutional levels insisted on creating a transfer system that reached beyond the mechanics of matching courses at multiple colleges and universities. With a clear focus on learning, they built a system that *matches courses with outcomes,* always trying to extend its benefits to as many students as possible.

- Ohio's student mobility initiative was guided by an understanding that bad execution, not bad strategy, is most often the reason why organizations and reforms fall short of their objectives. As one business leader wrote a few years ago, execution is not rocket science, but it does require disciplined action – an operating plan capable of delivering the strategy. Effective execution doesn't just happen. It demands that fundamental building blocks be in place, that organizational resources be matched to the realities of the task, and that leaders are committed to the initiative's success.[9]

That's what Ohio student mobility initiative has been all about – and that's the rest of the story.

[9] Larry Bossidy and Ram Charan, *Execution: The Discipline of Getting Things Done* (New York: Crown Business, 2002.

LEGISLATIVE LEADERSHIP

There's No Place for Arbitrary Barriers

by The Honorable Shawn Webster

Transferring credits from one college to another is essential for student advancement and degree attainment. It can improve and widen postsecondary participation rates, facilitate lifelong learning, eliminate unnecessary tuition costs and reduce non-completion rates. Credit transfer is a critical element in supporting students along educational pathways.
So why is it so complicated?

For years, I'd heard this question asked by my constituents and all too often by my colleagues in the Ohio General Assembly. I'd heard from students and families about their surprise – and frustration – when they discovered that courses completed at one institution had little or no value when they transferred to another college or university. In many cases, students found that college courses didn't meet degree requirements at their new institutions. Major-specific credits were not recognized.

Nothing was guaranteed, except that student mobility could result in a loss of time and money, as colleges defended their institutional prerogatives in the name of quality and autonomy. So for lawmakers, the issue was pretty clear: Why do the students and the state have to pay twice for the same course?

State legislators increasingly have demanded change – and I was very vocal on this issue. Our position was simple: If the higher education establishment couldn't correct it, we would. In fact, that's exactly how I got involved with articulation and transfer, by drafting legislation that would create a common course system to guarantee that courses would transfer and apply across the system. We were not going to mess around and let another generation of college students lose time, money and credits.

That's why state legislators directed the Ohio Board of Regents to develop a statewide mechanism that would allow students to transfer credits when they move from one state-assisted institution to another. And to be very honest about it, I didn't think it could happen.

As it turned out, the Regents were proactive and had strategies in place that could build a course equivalency system that guaranteed course transfer. In fact, the Regents were already beginning to work with colleges and universities to change things. Over time, and by working directly with them, I grew to understand and appreciate more fully the nuances and complications of both system and culture change in higher education around credit transfer and student mobility. And again, over time, I became more of a "friendly critic" advocate of their work.

The articulation and transfer system grew to encompass even more than I imagined. Today, it is a successful enterprise. Saying that, I also sense that the Regents couldn't make it happen alone. So we gave them the legislation and resources needed to build capacity. We demanded a guaranteed transfer system among colleges and universities; and, invoking calls for accountability, we established completion and reporting deadlines and linked our directive to future appropriations.

And it worked. Everyone agrees that the job is not done, but Ohio's student mobility and credit transfer system already is proving its value – for students who want to move among programs and institutions, for institutions that are committed to quality assurance within the context of a broader postsecondary system, and for a state that understands the importance of helping more students complete their studies in a timely, cost-effective manner.

Ohio's student mobility system also illustrates the role of legislative leadership in breaking down barriers and providing both directives and incentives in guiding the development of a transfer system that is student centered. Ohioans no longer need to pay twice!

CHAPTER TWO

From Policy to Practice: How the Transfer Tools Work

Describing Ohio's articulation and transfer history – and the major components of its student mobility system – is only one of the purposes of this primer. Giving readers a "how to" explanation of the key concepts and processes that drive the state's approach to credit transfer is a second objective – and it's the focus of this chapter.

This purpose requires more detailed information. It calls for answers to such questions as: How is a Transfer Assurance Guide (TAG) developed? How are course equivalencies defined? How are courses matched and what role does the Ohio Articulation Number (OAN) play? And what tools are available to help implement a transfer system?

By tackling each of these issues here, we are acknowledging that a good plan – in this case, a student mobility system – doesn't really matter if it doesn't get carried out. The success of that implementation depends on how people tackle the details. And yes, the details are important, not just because that's where the "devil" is, but because, as Steve Case, AOL's former chairman once cautioned, "In the end, a vision without the ability to execute it is probably an hallucination."[10]

General Education

Let's begin with a reminder about **"General Education."** Ohio's credit transfer initiative is rooted in the Transfer Module that, as explained in the first chapter, is the set or subset of an institution's General Education requirements. This is the foundation upon which all other transfer components build. Specifically:

- All colleges and universities have a General Education core with options in which all degree-seeking students participate. Ohio has had an agreed upon General Education core across five disciplinary areas for the past two decades that is common to all institutions.
- Courses in these core disciplinary areas are guaranteed to transfer and apply at the receiving institutions.
- Initially, the entire transfer module had to be completed before it could be transferred. Today, approved Ohio Transfer Module courses – individual courses – can be transferred and are likewise guaranteed to apply.
- Transfer module courses are required to meet the guidelines within each of five areas: English and Oral Communication, Mathematics, Arts and Humanities, Social Sciences, and Natural Sciences. To be approved, each course in the Transfer Module must be reviewed and approved by a Board of Regents' standing faculty committee in the discipline.

The first chapter provided a Transfer Module framework that incorporates the five disciplinary areas contained in the General Education component. Appendix B presents, for illustration, an approved TM with all courses for one of Ohio's public universities and a community college.

Looking at the completed Transfer Module. one sees that the components of the TM address the three areas or levels of General Education; (1) the Minimum General Education Requirements (Column A) are specifically approved courses and a number of hours (24 semester or 36 quarter hours) required in each of the five disciplinary areas; (2) the Additional General Education Requirements (Column B) drawn from a broad range of courses (an additional 12-16 semester or 18-24 quarter hours); and an Interdisciplinary Hours options component (Column C) that covers broadly any of the areas included in the TM. This option is intended to provide flexibility for programs that may have more unique ways of delivering General Education.

[10] Jeffrey E. Garten, *The Mind of the C.E.O,* (New York: Basic Books, 2001), page 143.

The last column, General Education Requirements beyond the TM for Graduation, is for informational purposes only. This lets students and advisors know in advance the additional courses and requirements in General Education at the upper level at the receiving institution that all students must take.

The Difference between the TM and the TAGs

The Transfer Module was developed as a total set or subset of a college's or a university's General Education that transferred in a block. Therefore, only the courses in each TM were reviewed for compliance to the five disciplinary areas, and only general understanding or "area" block transfer, were developed for each area. Individual TM courses were reviewed by faculty members against a set of guidelines for each area.

The TAG courses, on the other hand, received faculty review against a set of agreed-upon learning outcomes for each course. The learning outcomes had the endorsement of the Ohio's public institutions of higher education.

A separate strategy was developed to allow for the transfer of beginning courses in a student's major discipline. Once approved, these courses are identified as TAG courses and their transfer is guaranteed, as major credit, to any of Ohio's public two- or four-year colleges or universities. These courses are deemed to be equivalent when they have been matched to the same set of learning outcomes and have been approved by the faculty review committee.

Transfer Module courses can now transfer on a course-by-course basis. In addition, learning outcomes are now being developed for TM gate-keeping courses or common courses, such as English and mathematics. Also a large number of the General Education courses already have outcomes established since there is an overlap with some TAG courses (e.g., economics and mathematics beyond the introductory level, and biological sciences). It is largely a technicality, but worth mentioning!

TAGs – Building on the Transfer Module

The Transfer Assurance Guides (TAGs) have become the center of Ohio's transfer system. They cover the beginning courses in a student's major discipline that are guaranteed to transfer. Virtually all components of credit mobility – from agreement on course outcomes to equivalencies and institutional course matching to the Ohio Articulation Number (OAN) – are rooted in TAGs.

How are TAGs constructed? Presently, Ohio has 38 TAGs with additional disciplines being added. Each TAG is composed of three components that, when taken together, form a sequence of transferrable educational experiences that can account for almost the first two years of college. These components are:

38 TAG Discipline Areas

Arts and Humanities
- Art History
- Dance
- English Literature
- Studio/Fine Arts
- Music
- Philosophy
- Theatre

Social and Behavioral Sciences
- Anthropology
- Criminal Justice
- Economics
- Geography
- History
- Political Science
- Psychology
- Social Work
- Sociology

Engineering
- Aerospace, Agricultural, Civil and Mechanical Engineering
- Bioengineering, Biomedical Engineering
- Chemical Engineering
- Computer, Electrical Engineering
- Industrial Engineering

Enginnering Technology
- Civil/Construction
- Electrical
- Mechanical

Education*
- Professional Education

Science and Mathematics
- Biology
- Chemistry
- Geology
- Mathematics
- Physics

Health
- Dietetics
- Medical Lab
- Health Information Systems

Business
- Business

Communications
- Communication Studies
- Journalism
- Public Relations/Advertising
- Telecommunication

*Early Childhood Education has recently been added.

SOURCE: Ohio Board of Regents

1. Transfer Module with recommendations – and with a well-defined set of *advising notes*
2. Foreign Language requirement (if applicable)
3. Pre-major and Beginning Major Courses in the Major (TAGs)

How these three components work together to build a specific TAG – and how students, advisors, and colleges and universities can use them to promote credit transfer – is illustrated below. These illustrations focus on a TAG in business and the structure is similar to the other TAGs that have been developed to date.

Note the hours and recommendations for each component. The advising notes are particularly important for advisors to ensure that students achieve their educational and career goals in the most effective manner.

It is important to see how the General Education offerings provide the prerequisites for the beginning course in the major. Advising is crucial in guiding students to take the most appropriate course(s) that align with the requirements of the major – in this case, business. By taking the suggested course in the General Education core, for example, the economics sequence will put the student in good stead and save time and credits by fulfilling both General Education requirements as well as prerequisites for the business major.

COMPONENT #1: **Transfer Module with Advising**

1. General Education Requirements (Ohio Transfer Module)

Ohio Transfer Module (OTM) Requirements: 36-40 semester hours / 54-60 quarter hours. Students should select courses within the OTM that complement the selected major and meet any specific general education requirements. Students are encouraged to complete the OTM to ensure maximum transferavbility and application of credits.

Required Disciplines	Minimum Hours	Recommended Courses *Courses below are required of all business majors*
Area 1: English Composition	3 sem. / 5-6 qtr.	
Area 2: Mathematics	3 sem. / 3 qtr.	Business Calculus (5-6 sem / 8-9 qtr) or Calculus 1 (4-5 sem / 8-10 qtr)
		Business Statistics (5-6 sem / 8-9 qtr hours)
Area 3: Arts & Humanities	6 sem. / 9 qtr.	
Area 4: Social Sciences	6 sem. / 9 qtr.	Microeconomics (Prerequisite) & Macroeconomics
Area 5: Natural & Physical Science	6 sem. / 9 qtr.	

Additional courses beyond the minimum required hours, from any of the disciplines listed above, will count toward the completion of the OTM (36-40 semester hours or 54-60 quarter hours).

Advising Notes:

The courses listed as part of the OTM are **required** of all Business majors seeking transfer into a baccalaureate program. Any or all of the classes so noted may be required in order to be admitted into the program.

e. Principles of Marketing Management	**OBU006**	3 sem. / 4 qtr.

Advising Notes: Prerequisite or co-requisite of one course emphasizing microeconomics

SOURCE: Ohio Board of Regents

COMPONENT #2: **Foreign Language** (if applicable)

2. Foreign Language

Demonstrate competencies through the 200 level. Credits: Up to 16 semester / 24 Quarter hours. Requirements vary from institution to institution. Check with your receiving institution before beginning a foreign language program.

SOURCE: Ohio Board of Regents

The third component identifies the beginning course in the student's major – in this case, business.

COMPONENT #3: **Pre-Major and Beginning Major Courses**

3. Introduction to the Major

Major Courses	OAN number(s)	Credit Hours
a. **Introduction to Financial Accounting**	OBU 001	3 sem. / 5 qtr.
b. **Introduction to Managerial Accounting**	OBU 002	3 sem. / 5 qtr.
c. **Legal Environment of Business**	OBU 004	3 sem. / 4 qtr.
d. **Business Communication**	OBU 005	3 sem. / 4 qtr.
e. **Principles of Marketing Management**	OBU 006	3 sem. / 4 qtr.

Advising Notes: Prerequisite of one course emphasizing microeconomics

TAG Total Guaranteed Credits (range)

Ohio Transfer Module	36-40 sem.	54-60 qtr.
Pre-Major/Major	0-15 sem.	0-22 qtr.

Institutional Requirements: For entrance and graduation, a transfer student must meet all institutional requirements which would include, but not be limited to: minimum grade point average, residency requirements, upper division ceedits attained, maximum grades in specific courses, performance requirements (e.g., dance and music): and other requirements of native students from the same institution.

SOURCE: Ohio Board of Regents

In understanding this component of the TAG, the beginning point is the "OAN," or the Ohio Articulation Number, in the center of the graphic. The OAN is an important component of the transfer system. Before discussing its significance, an explanation of "course equivalency" is required**.**

Understanding Course Equivalency: Five Action Steps

When it comes to credit transfer, course equivalency is the Alpha and Omega. Without the course equivalency matrix, course matches would not be possible and transfer would be risky. The key to course equivalency is in defining agreed upon outcomes that represent a course. Once the course outcomes have been established, it is relatively easy to match courses from different institutions.

Frequently, as Ohio's credit transfer system was being developed, courses at particular colleges and universities had to be restructured to include the appropriate outcomes or content – and that was the responsibility of individual institutions. A significant number of faculty members from two-year and four-year campuses were used to identify the outcomes and approve the matches.

The Ohio Board of Regents became well schooled in how to accomplish this since it had ample practice. In all, outcomes were established for 139 OANs.[11]

In fact, Ohio became so proficient in developing a course-equivalency system for the state that the Regents patented a five-step process, building a structure and sequence of activities from the initial experiences. Establishing equivalencies for courses in a major requires:

- **STEP #1: Defining**
  Joint faculty panels meet to agree upon courses appropriate for transfer in the particular discipline and to define learning outcomes and credit hour ranges for each. In this example, faculty defined the courses appropriate to transfer within the business TAG. This is not easy and can be, at least initially, a contentious process since an understanding is required regarding how many and which of the lower division courses should transfer. This challenge also differs depending on the discipline, with some being easily addressed while others take much longer to reach consensus. The course numbers often are of little assistance since there is wide variation across institutions regarding the "level" of courses. Ongoing feedback from the discipline committee and campuses can overcome this challenge in time with a consensus being reached. Disciplines also differ in the number of guaranteed courses transferring, ranging from approximately two to five.

- **STEP #2: Agreeing**
  Educational partners reach consensual agreement on the learning outcomes via a statewide feedback process. The outcomes are shared with all public colleges and universities, which offers the major and the institutional feedback is collected and analyzed by Regents staff and the faculty panel. Adjusting the outcomes to address concerns or suggestions occurs by the disciplinary panels and the outcomes are continually shared with campuses. This reiterative process allows for campus input while developing a more viable set of outcomes for courses. When a general agreement or consensus around the outcomes is attained, the Regents send to campuses the final outcome listing for each course in the major.

- **STEP #3: Matching**[12]
  Given the final list of outcomes for each course(s), institutions can now match their own courses to the learning outcomes (OANs) with the accompanying credit hour ranges. Each campus matches its existing course to the outcomes. Often, courses have to be modified to complete the outcome match. In some cases, new courses must be developed. A common set of outcomes – and thus the matched course on campuses – provides for a level of commonality across campuses that help ensure students are prepared for the next level regardless of where they transfer.

- **STEP #4: Submitting**
  Institutions submit to the Regents specific course materials (syllabus, texts, lab requirements, etc.) that have been matched to the course outcomes. These materials are forwarded to the appropriate faculty panels for review.

- **STEP #5: Reviewing**
  Discipline-based faculty review panels validate course materials against learning outcomes, recommended credit hour ranges, and other requirements. If the matches are not aligned properly with credit hours range, or the outcomes don't match, the course is returned to the submitting campus for revision. If the outcomes are appropriately matched and the course is approved, it is deemed that the courses are equivalent and the course is listed in the Regents' course equivalency system. It is important that these faculty review panels be reconvened periodically to ensure ongoing content currency.

[11] To date, 4,684 courses resulted in 3,315 approved matches that align to 139 Ohio Articulation Numbers (OANs), which represent thousands of equivalencies statewide.

[12] The processes of Matching, Submitting and Reviewing are now conducted electronically through the Course Equivalency Management System. See diagram on page 33.

The approved institutional course match that aligns to the set of learning outcomes (which is designated by the Ohio Articulation Number or OAN) for a TAG constitutes a course equivalency. The total universe of all the approved matches (courses) equals the Course Equivalency System.

Through this process, a series of agreed-upon course equivalencies were generated. These "matchings" are the basis for the equivalencies of courses across institutions – and that takes us back to the OAN (Ohio Articulation Number). This is such an important concept in Ohio's credit transfer system – it is worth reviewing once more.

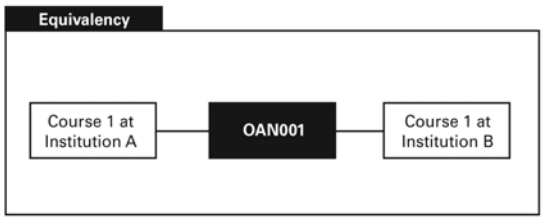
QUESTION #1: What is a match?

- A match is a set of one or more courses in a particular subject area that individually or grouped together meet an agreed-upon set of learning outcomes, recommended credit hour ranges, and other requirements. All of this is reflected in a corresponding Ohio Articulation Number (OAN).
- An OAN is simply a naming convention used to uniquely identify each set of learning outcomes. OANs act as "connectors," removing the need for a common-course numbering system.

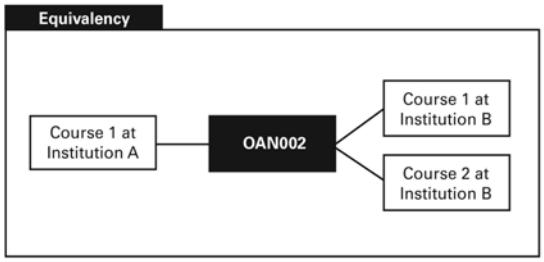
QUESTION #2: Who approves the matches?

- Discipline-based faculty panels have been formed through nominations from both two- and four-year institutions.
- These panels consist of faculty members from across the state chosen to represent their discipline.
- It is these panel members who make the decisions regarding whether or not a match should be approved.

A Simple Course-to-Course Match



Multiple Courses Can Meet the Same Set of Learning Outcomes



SOURCE: Ohio Board of Regents

QUESTION #3: What qualifies a match for approval?

- The match must meet 70 percent – including the outcomes deemed essential, or in some cases, depending on the discipline, 100 percent – of the learning outcomes.
- Credit hours must be taken into account as well because they are commonly viewed as an indicator of breadth and depth.
- The match also must meet any other requirements, including prerequisites, laboratory hours and, where appropriate, textbooks.

QUESTION #4: What is an equivalency?

- An equivalency exists when a match is approved as meeting a specific set of learning outcomes, identified by an OAN. If two institutions have approved matches to the same set of learning outcomes (and both approvals are effective for the same time period), the matches are equivalent.

QUESTION #5: What if there is no equivalency?

- Sometimes, a college or university will either not have a course that would fulfill a specific OAN or their course has not yet been approved.
- If this does occur, any student who has completed an approved match to the OAN is guaranteed to receive credit in the major for the completed coursework. How that credit applies to the major is up to the receiving institution. However, this is a temporary solution until the institution makes the necessary changes for a course match to be established, which is occurring quickly.

Presently, Ohio has 139 OANs – and the number is growing. Each OAN represents a set of agreed-upon learning outcomes. Colleges and universities map their courses to these OANs and faculty panels routinely review course mappings. Sometimes, an institution will map more than one course to a single OAN, in part because of differences in quarter and semester systems.[13]

Equating Career-Technical Programs to Course Credit: Applying the Five Action Steps in Another Context

House Bill 66 (ORC 3333.162) required the Ohio Board of Regents, in consultation with the Department of Education (Adult and Secondary Career-Technical Education) to develop policies and procedures that enable students to transfer agreed upon technical courses completed at an adult career center or a public secondary career-technical institution to a public college or university. The courses were those that adhere to or are part of a recognized industry standard. (We termed this process CT^2 – for career technical credit transfer.)

This required the development of a process that matched the learning outcomes from the industry certificates offered at the adult career centers—such as automotive technology, IT-networking, emergency medical technician, etc.—to the outcomes offered in the same or similar credentials at colleges.[14] To complicate the issue, the adult career programs adhere to a clock-hour definition, not a credit definition as used by higher education.

Career-Technical Assurance Guides (CTAGs)

Practical Nursing
Medical Assisting
Mechanical Engineering Technology
Electrical Engineering Technology
Information Technology – Networking
Information Technology – Support and Services
Automotive Technology
Volunteer Fire Fighter
First Responder
Fire Fighter I
Fire Fighter II
EMT-P
EMT-I
EMT-B
HVAC/R
Ohio Peace Officer Basic
Culinary and Food Service Management

[13] Since the learning outcomes are the drivers of courses and matches under the Ohio credit transfer system, it is important that they are accurate and on target. For this purpose, a "fail safe" strategy was incorporated into the work. To identify anomalies in the sets of leaning outcomes, the Regents developed an Ohio Articulation Number (OAN) Approval Index Report. When an OAN had a higher than normal disapproval rate, an in-depth analysis was conducted to ascertain the reasons for these disapprovals. In practice, all OANs with low approval index scores were reviewed for accuracy. Sometimes, the problem was linked to the inaccuracy of one or two of the learning outcomes within an OAN. If the required consensus for a guarantee could not be achieved, modifications were made. When leaning outcomes across the state were not consistent for a particular course, more drastic action was taken. For example, Computer Problem Solving for Business and Non-Western Literature were eliminated due to this issue.

[14] The Electrical and Mechanical Engineering CT^2s are not industry-recognized certificates. We included these engineering technologies to determine if it is possible to develop agreed-upon learning outcomes for experiences, and to match these outcomes for adult career centers and colleges. We discovered that it is possible, but extremely difficult for a number of reasons.

To address the "program to course credit" issue, the following five-step TAG process was adopted and modified for the CT^2:

- **Design** learning outcomes based on recognized industry standards. Having the outcomes upon which course credit is already awarded on campuses specified by industry provides a common metric for judging equivalency since knowledge and skills are based on recognized industry standards such as credentialing or licensing examinations. Both the colleges and the adult career and secondary career- technical schools employ the same content and outcomes thus assisting the disciplinary panels (specific technical area), composed of faculty from colleges and universities and adult career centers.
- **Agree** on the learning outcomes across campuses and adult career and secondary technical education. The primary focus is developing criteria, policies and procedures for agreeing on the program-to-course credit surrounding an industry credential and the number of credit hours awarded. While the industry credential is awarded at both adult career centers and colleges, there are significant differences in how the content is organized. Colleges, for example, often imbed their credentials throughout their coursework that builds toward a degree. The adult career center usually addresses the industry credential on a program basis. Just like the TAG process, the outcomes were shared broadly and refinements made. This again was a reiterative process with all stakeholders having input and reaching a consensus.
- **Match** the course program to the learning outcomes for CT^2 submissions at adult career centers and colleges.
- **Submit** the course/program materials (including program accreditation credentials) based on learning outcomes to the Regents; these materials are forwarded to the faculty panels for review.
- **Review** the course/program materials for equivalency by a faculty panel for each specific technical area. The panels validate course materials against the learning outcomes and industry standards, if matches aren't aligned properly, they are sent back for further work. If the courses for the industry credential are approved, it is listed in the Regents' course CT^2 equivalency system.

To assist adults in matching coursework for CT^2, a web-based portal will be developed that provides a searchable web-based resource for students, faculty, registrars and advisors. It will be an interactive listing of the approved program matches that delineates for adult students how college course credit will be awarded. To date, 17 career-technical program areas are available for transfer.

Appendix C contains an example of a match for an industry credential (automotive). The development of the process equating *programs to credit* around industry-recognized certificates enabled adult students to gain traditional college credit for equivalent work at an adult career-technical center. This also provides a "bridge" for adult students to enter college with credit and the confidence they can be successful in college level offerings, and it lessens the time to degree completion.[15]

[15] To learn more about how programs are turned into course credit, visit Ohio's articulation and transfer web site at http://regents.ohio.gov/transfer. Click on Career Technical Credit Transfer.

A COMMUNITY COLLEGE PERSPECTIVE:

Ohioans Demand Opportunities for Greater Mobility

by Dr. Roy A. Church

In the new world economy where jobs requiring at least a two-year college degree are expected to grow twice as fast as jobs requiring no college experience, we must create opportunities for all of our citizens to acquire the skills they need to compete for the jobs of the future.

How can these opportunities be created? In part, the answer is to raise Ohioans' aspirations for continued learning, broaden their understanding of the state's education and training resources, and provide the services that improve their access to and success in postsecondary learning, which is the special province of community and technical colleges. In addition, Ohio's opportunities must be more transparent and easier to navigate, and arbitrary and unnecessary barriers to learning must be identified and removed.

This is why the Regents' articulation and transfer initiative is so crucial for the state. It is why, for nearly two decades, I have continued to be an advocate and provide leadership for this issue. In addressing crucial educational issues such as this, presidents must lead the charge and hold others accountable. Change, especially system change, is hard work and requires ongoing vigilance and constant engagement. Campus leaders need to keep their "eye on the prize" and not let time and inertia erode past accomplishments.

Ohio's articulation and transfer work has met much resistance over the years. It has encountered predictable "turf" battles – sometimes fueled by concerns about quality and at other times fed by the inertia for historic institutional prerogatives and behaviors. But much of that resistance dissipated as educators began to realize that colleges and universities can benefit from student mobility. As colleges and universities became familiar with the protocols and mechanisms that define how an emerging credit transfer system provides the infrastructure to facilitate seamless student mobility, they become engaged.

Acceptance of a new way of doing business also was encouraged by the realization that the decision to guarantee credit transfer had already been made in the State Capitol. The task at hand was to implement a credit transfer system in a way that was both academically and institutionally warranted.

In that regard, presidents played a critical role by carefully using their bully pulpits to create a vision and the strategy to achieve the goal, to set campus priorities and to motivate change. They put together the teams that would work through the details of planning and execution. They empowered broad-based action by encouraging non-traditional ideas and approaches.

Importantly, campus presidents worked to create a new culture of learning that connects high schools, adult career centers and colleges and universities to increase students' academic opportunities and improve their career prospects. Most of all, they kept everyone at the table working on an equitable system that has quality checks and balances and works for students, institutions and the state. The process works because it puts students in the center of the transfer process and gives them the tools to navigate the postsecondary system to achieve their highest aspirations. The students at Lorain County Community College have benefited significantly from this cultural shift.

CHAPTER THREE

Applying Technology to Credit Transfer

Early in the process, it was realized that technology was going to play a significant role in Ohio's strategy for developing a credit transfer and student mobility system. The state's efforts could not have been successful without the development and support of a sophisticated technology infrastructure that supports the electronic transcript exchange among institutions and facilitates other management functions.

No one fully appreciated this fact in the early days of the project, nor did anyone understand the absolute necessity of a centralized information sharing system. Eventually, however, it became clear that without an electronic transcript that could be sent and received by all institutions – and a statewide clearinghouse to interpret the course equivalencies – campuses and registrars would be seriously handicapped. Without innovative technology, campuses would not have the capacity to send and receive – quickly and accurately – detailed data files. Without a common technology base, campuses would have been required to move data by hand and to rely on local technology solutions.

The significance of this limitation – not having a common system that translated transcripts and moved other data among public campuses – became more obvious every day, particularly as the number of equivalences increased into the thousands and the demands for making course matches grew exponentially. So the search for a solution began in earnest.

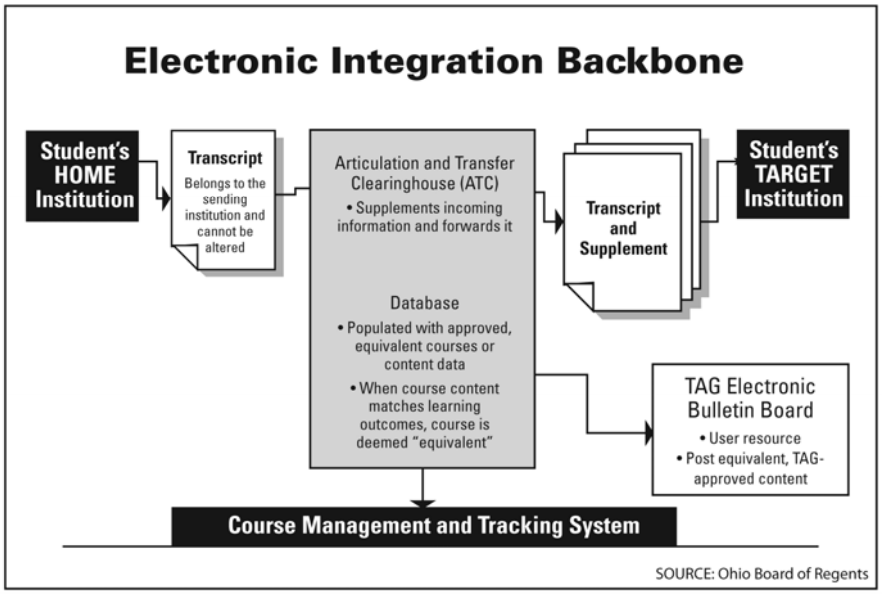
It was the director of the Degree Audit Reporting System at Miami University – the author of the Course Applicability System, which documents how courses transfer from one institution to another – who first pointed out the necessity of developing a transfer clearinghouse.[16] Ultimately, the Regents began to develop a technology infrastructure to support the electronic transcript exchange among institutions.

The ATC was built to send transcripts electronically among the public institutions of higher education in the state and to ensure the equivalency guarantees. A transcript is sent and received in less than a second compared to the old "snail" mail system.

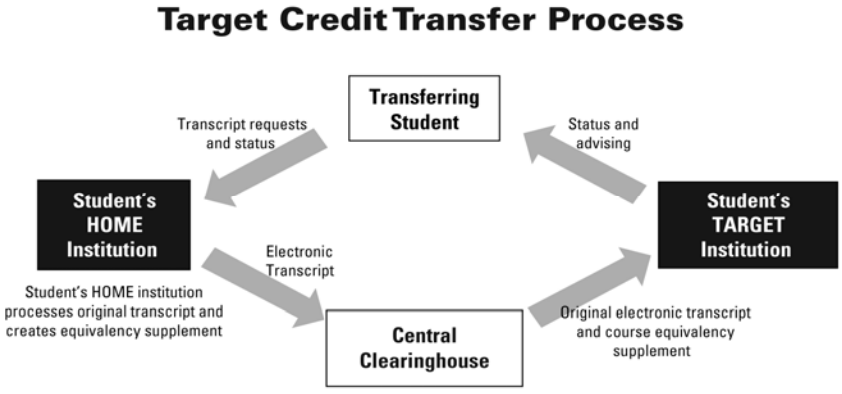
The solution – the centerpiece of the new system – is the Articulation and Transfer Clearinghouse (ATC), which is a software system developed and operated by the Ohio Board of Regents. ATC securely routes electronic transcripts for the public colleges and universities using nationally-accepted standards. Eventually it will match courses taken by a student at his or her current institution with courses approved to be "equivalent" under the state's Articulation and Transfer policy.

These equivalencies are documented in a transcript supplement, which has been developed and is in the process of being implemented for the TAG courses. In other words, the ATC facilitates electronic exchanges of student transcripts among public higher education institutions and will provide those institutions receiving transfer students with additional information regarding how a transfer student's current coursework matches the new institution's coursework. TAG courses are guaranteed to transfer and apply to the major. In this manner, receiving institutions consider transfer credits in a consistent (and guaranteed) method across the state. The following schematic diagram illustrates how the electronic transcript system and the ATC will operate in the near future to provide an integrated electronic infrastructure for credit mobility.

[16] This system now is called u.select and is part of redLantern. For more information about the system, see www.redLantern.com.



The changes that the ATC will provide are easily seen through the transcript flow diagram below, parts of which are in operation while others are still being implemented. A student will be able to request a transcript from his or her home institution that is sent through the Articulation and Transfer Clearinghouse. Shortly, the ATC will be able to create an equivalency supplement (providing the transfer guarantees) that will then be sent to the student's target (receiving) institution. The interaction will take under a second and the transcript will arrive electronically with the supplement providing the detailed guarantee course matches reflected by course number and title for the registrar. The student will no longer need to wait weeks (or, in many cases, longer) while the transcript is mailed and someone at the receiving institution interprets the transfer credits.



It's a win-win situation for all involved. Colleges and universities benefit because electronic transcript exchange allows for significant automation of transfer processing. Students benefit through the consistent application of TAG and OTM coursework (the guarantee), as well as improved reliability of the processed transcript data at the receiving institution. Electronic processing of transcripts, as well, speeds the overall transcript evaluation process.

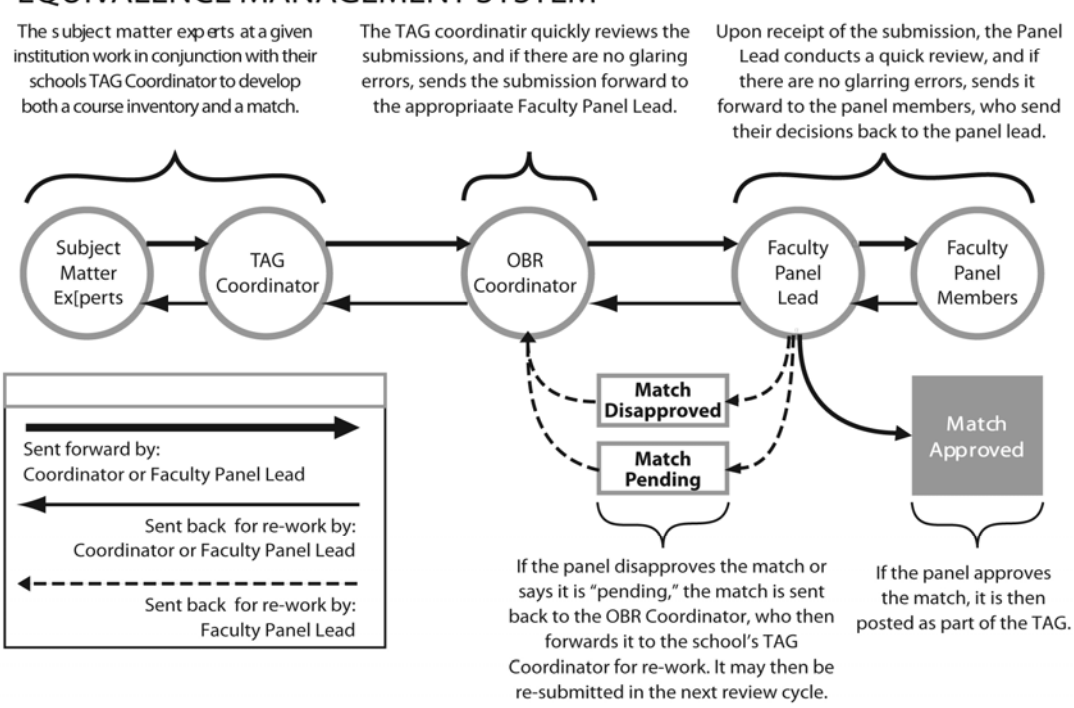
A credit transfer system that matches courses requires some sort of statewide clearinghouse. Ohio decided to build its own since at the time there were limited alternatives. Today, there are companies that can provide a number of alternatives to building your own system.

While the vision of the Articulation and Transfer Clearinghouse became a part of Ohio's student mobility plan, little attention was given to how the TAG course matches would be submitted and reviewed by faculty. This also was true for the industry-based credentials. Thousands of course matches had to be submitted and reviewed, but all that existed was an old-fashioned paper and pencil process.

The submission and review of all the OTMs and TAGs necessitated another way of doing business – one that lessened the time and travel of faculty. So a second piece to the technology infrastructure was developed – a "Course Equivalence Management System" – to provide easy access to course submitting and review protocols by faculty and campuses across the system.

Understanding the Process

PROCESS FLOW: THE COURSE EQUIVALENCE MANAGEMENT SYSTEM



SOURCE: Ohio Board of Regents

Colleges and universities now review online the course, catalog descriptions, textbook information, outside readings, assessments used, syllabus and other additional information to determine course viability in meeting learning outcomes, and guaranteed matches. This has been a tremendous benefit for the initiative since it reduces the "wear and tear" on faculty volunteers and reduces the cost of reviews since they can be accomplished at a distance by individuals on their respective campuses.[17]

The key lesson learned was: When new policy is being developed, attention must be given, at the same time, to how technology can be used to implement the policy. Ohio also developed a web-based tool – the Course Equivalency Management System (CEMS) – to provide easy access to course submission and review protocols by faculty and campuses across the system.

[17] More information about Ohio's comprehensive Course Equivalence Management System can be found on the Ohio Board of Regents' Web site at http://regents.ohio.gov/transfer.

One final technological development provides depth in supporting student mobility. The Transfer Assurance Guide Reporting System is a web-based resource that helps users identify equivalent TAG-approved (guaranteed) courses at Ohio's public colleges and universities. The interactive site allows people to search and find TAG matches among all public institutions. This helps address the very crucial issue of how to provide tools that students and advisors can use to assess the guaranteed curricular pathways among institutions. The same technology use addresses the identification and guarantee of General Education in the Ohio Transfer Module (OTM).[18] This is really the user operational aspect of the *course equivalency system* that was described in the first two chapters.

Many of Ohio's colleges and universities are currently using the ATC web-based services to send and receive transcripts – and the other institutions are working to achieve this goal. The ATC is transforming how Ohio moves academic credits – and students – throughout the higher education system. Work is now being focused on developing a web-based, comprehensive student service component for the University System of Ohio in which the credit transfer system will be a pillar.

[18] To view both the TAG and OTM interactive sites, visit http://regents.ohio.gov/transfer/ and click on "Transfer Guarantee Reporting Systems," which is in a box in the bottom right corner of the page.

A UNIVERSITY PERSPECTIVE

Leaders Support Transformation of Their Campuses

by Dr. Nancy Zimpher

The past two decades have seen growing interest in the issue of credit recognition and transfer in Ohio and around the world. Many countries have taken steps to make credits portable and to ensure that transfer doesn't put students academically back at square one.

Not all of these efforts have been successful, and some of them are non-guaranteed arrangements with little teeth behind them. Credit transfer arrangements often have focused most of their attention on relationships that allow students to begin courses at a two-year college and complete them at a four-year university, often slighting the transfer of credits among universities or two-year colleges. In many cases, these mechanisms have been centrally driven, yet the local (or institutional) buy-in has been limited.

This has not been Ohio's experience, in part because the state's education policy leaders recognized – from the beginning – that a government-led, top-down approach wasn't the solution. Instead, they designed a system that ensured stakeholder support from institutions and students; and more explicitly, they created a credit transfer system in partnership with those who lead and manage the state's public colleges and universities.

A lot of the credit for Ohio's success rests with these institutional leaders, by which I mean faculty members, top administrators and presidents. Together, they used their convening powers to bring people together – to make student mobility and credit transfer a campus priority.

I don't want to overstate the case and make it seem that this was an easy task or that campuses opened up their arms and said "me too." There are always turf and financial issues that need to be addressed. There are traditional and historical ways of conducting campus business that need to be accommodated. Any change to such norms can be a challenge.

In this case, both the Ohio General Assembly and the Board of Regents were adamant about implementing a comprehensive credit transfer system. In the end, Ohio's public universities stood behind and supported the state's efforts to create a new, student-centered system of higher education that redesigned institutional prerogatives to support the needs of their students and the state. They helped make it work.

Understanding the value of and need for effective leadership, these campus-level advocates created a true sense of urgency – a commitment to develop transfer mechanisms now, not eventually when it fits easily into people's schedule. They energized their institutions' efforts to build reliable, high-quality credit transfer mechanisms by putting teams of people together and directing them to build the TAGs in particular subject areas, establish course equivalencies, define learning outcomes and more.

Most critically, these leaders helped people discover what worked best for their own institutions. They created a process for change on their own campuses and committed resources so timelines could be kept and quality could be preserved. In short, they championed the transformation of their student mobility and credit transfer practices – a transformation that demands the committed leadership of presidents, senior administrators, deans, faculty and staff. In the end, nothing trumps effective leadership.

CHAPTER FOUR

Engaging Students: The Advising is the Key

The best-designed credit transfer and student mobility policy will not benefit students if advisors don't know how to use it. No policy will help students achieve their educational goals until it is fully understood and embraced by advisors, faculty and other professional staff who interact with and support students.

Those who designed Ohio's credit transfer system understood this and recognized the challenges it presented. From the beginning, they grasped the importance of communication and worked to ensure that students would have the information needed to identify and take full advantage of the most efficient pathways to their desired degrees and credentials. In fact, the system's TAGs – the Transfer Assurance Guides – were developed to support comprehensive and reliable student advising services. Along with the state's course equivalency system and its guarantee that specific courses could be transferred among all public colleges and universities, the TAGs provide students with the assurance that their course-taking patterns – at multiple institutions – will support their goals and aspirations.

The Need for an Effective Advising System

A well-designed advising system can serve several purposes. It can ensure that students have detailed guidance on the availability of degree pathways and the transferability of specific courses among Ohio's public institutions of higher education. It can provide students with clear and accurate information about what courses they must complete to achieve their degree or certificate goals in their selected areas of study. System-wide, it can give advisors, faculty and other professional staff comprehensive and consistent information that will allow them to better serve students who are considering transfer to another institution (or who have just moved to another college or university). At best, it can provide comprehensive services that help learners achieve their education goal and support their career objectives.

> *"The key to successful transfer is advising. Nothing substitutes for clear and accurate advising – absolutely nothing!"*
>
> *Vice President, Enrollment Management, Cuyahoga Community College*

In Ohio's case, several factors contributed to the early recognition of the importance of student advising:

- First, as the new credit transfer system was being developed, student mobility was on the rise. At both the institutional and statewide levels, there was a growing understanding that the notion of students beginning and ending their studies at the same institution was no longer the norm. Therefore, there was a demand for advising that reached beyond the boundaries of individual institutions and helped students respond to *transfer strategies and opportunities.*
- Second, people recognized that navigating the sometimes conflicting policies, guidance, requirements and timelines of a single college or university can be challenging. More importantly, they acknowledged that moving between and among multiple institutions often is far more difficult, and the possibilities for missteps and unproductive course-taking patterns that slow progress toward degree completion are greatly increased.
- Third, those involved in the development of Ohio's new credit transfer system acknowledged that many students – and possibly a majority of them – entered college with only a vague sense of what career they would ultimately pursue, much less the courses they would need to complete in preparation for that journey. They also agreed that when the postsecondary learning experience involves a transfer among institutions, course choices can be especially challenging, particularly early in a student's academic career. Hence, the Transfer Module helped students in the General Education core areas, and other

elements of a more robust advising system assisted students in making course choices that supported timely academic progress and readiness for the major.

- Fourth, there was a widespread agreement that the traditional way of handling student/credit transfer issues was time consuming, if not downright slow. Using the U.S. mail, transcripts and accompanying data were sent to the transfer institution for validation and awarding of credit. Often, students were required to enroll – and to begin coursework at their new college or university – before being told which credits could be transferred and which would be lost. In that traditional environment, advisors and registrars routinely were the captives of campus catalogues, which were their primary source of information about policies, program requirements and course drops/adds. The need for a new way of getting things done was widely recognized, and the benefits of a new approach to advising – one that promoted credit transfer and student success – were turned into a priority.

> *"Starting my college education here at Sinclair will save me and my family lots of money. And with the help of my professors and advisors – and the state's Transfer Module – I have the certainty of being able to earn my BA degree elsewhere with all of my credit intact."*
>
> *STEM Major*
> *Sinclair Community College*

Getting Started

Early in Ohio's credit transfer initiative, it became obvious that the diversity of Ohio's higher education system necessitated that progress in the implementation of numerous provisions of the policy be measured on an ongoing basis. Equally clear was the need to monitor and document academic and student support professionals' understanding and consistent execution of the new credit transfer policy.

As mentioned in Chapter 1, an annual questionnaire was distributed, early in the articulation and transfer initiative, to all public postsecondary institutions to assess the effectiveness of efforts to implement the articulation and transfer policy. Through 2001, the results of these surveys confirmed tremendous variation among institutions in the interpretation and understanding and execution of the new policy.

To ascertain the extent to which colleges and universities understood and were implementing the new policy, the Articulation and Transfer Advisory Council established a subcommittee to gauge the impact of Ohio's emerging credit transfer system. In addition to studying the policy's consequences, the subcommittee was charged with examining the outcomes of campus visits and developing a set of recommendations to guide colleges' and universities' efforts to reduce artificial barriers and promote degree completion in an environment of increased student mobility.

To inform this work, the Articulation and Transfer Advisory Council conducted "policy impact" visits to most the state's public higher education campuses. The impact teams were composed of Regents staff and campus personnel with sufficient expertise in the new policy's primary areas of activity. The subcommittee's findings confirmed the need to strengthen and expand existing advising efforts and information dissemination.

As these initiatives were being carried out, another group – the Northern Ohio Transfer Council – was taking an independent look at some of the same issues. The Council was comprised of people from Ohio colleges and universities who worked in direct contact with advisors, students and families. Its purpose was to improve constituents' awareness and understanding of the state's new credit transfer policy – and to identify ways in which their campuses could meet the challenges of carrying it out. Also, taking its lead from the Northern Ohio Transfer Council, a similar group was formed in Southwest Ohio, and the two groups eventually merged to create the Ohio Transfer Council.

> *The Ohio Transfer Council is an organization committed to the enhancement and facilitation of transfer for students among its member institutions.*

Consisting of individuals working in direct contact with students and parents – and in a unique position to intensify the Ohio Board of Regents' educational outreach efforts – the new Council provided a much needed advising/ communication infrastructure to support the efforts of individual institutions. Most critically, it helped colleges and universities deal with the challenges of a growing population of non-native (transfer) students – that is, to assist campuses in developing strategies for integrating transfer students into the broader student population and to determine how these students could fit with the larger context of enrollment management. The Council worked to achieve more consistent implementation and improved communication across the state.

> *"My son used CAS/u.select to view the four-year universities that offered a social work major and determine which schools would apply the majority of his Cuyahoga Community College courses to that major. He was able to narrow his options to three universities, scheduled appointments with the transfer advisors at all three, and brought his CAS/u.select planning guide to each appointment. The University of Akron applied the most credits and he graduated with is BA in Social Work in just 1-1/2 years".*
>
> *Parent of an Ohio student*

Expanding Ohio's Communications and Advising Services

With its diverse membership (currently more than 150 individuals), the Council continues to offer training, educational workshops and programs for student groups, university faculty and staff and high school counselors. This unique partnership has proven effective in helping promote awareness and knowledge of the benefits of the Ohio credit transfer policy – and, more broadly, of the University System of Ohio.

Yet, the development of an effective advising system continues to be a struggle and substantial efforts are needed to scale up its capacity to meet the demand of learners and institutions alike. For this purpose, the Ohio Board of Regents, in collaboration with the Articulation and Transfer Advisory Council and the Ohio Transfer Council, is addressing a number of critical issues designed to improve the quality of Ohio's advising initiatives.

Ohio is continuing to use a web-based and statewide Course Applicability System (u.select) that provides students with ongoing access to transfer course and degree completion information as it relates to Ohio's colleges and universities. Launched early in the state's credit transfer initiative, CAS provides up-to-date course equivalencies and program requirements, as well as information about bi-lateral agreements. It provides a Web-based mechanism for students and advisors to evaluate the transferability of courses against a program including course equivalencies and applicability. This has proved to be an invaluable resource for accurate advising for transfer. (It is anticipated that CAS will continue to provide this service in its current form as u.select, even though it is being operated by a new company, redLantern, LLC.)

> *"In the past, we were able to provide students with General Education guides and transfer module information to assist them in selecting courses at their community college that would transfer to The University of Akron.*
>
> *We are now able to help students choose courses in the TAGs that will help them in two ways. First, the opportunity to take courses that will apply towards major requirements will save students time and money when they transfer to our university. And second, it will allow students to explore majors by taking entry-level courses in their majors. Students have commented that they were able to eliminate some major choices by taking the introductory courses in their potential major."*
>
> *Director of Transfer Student Services Center, The University of Akron*

In partnership with the Ohio Articulation and Transfer Advisory Council, the Ohio Board of Regents has formed campus-based information teams to address issues related to credit transfer. Each team has a designated "point person" to improve communication among campuses.

Finally, the Ohio Transfer Council is conducting training and advising sessions via varied modalities (e.g., workshops, on-line Web sessions and large group presentations). These

customized sessions are geared to multiple audiences, including prospective students and families. The training sessions are conducted by volunteers from the Council.

Both the Ohio Transfer Module (OTM) and the Transfer Assurance Guides (TAGs) provide the guarantees fundamental for accurate and extensive advising, as well as academic and career planning. Cuyahoga Community College, for example, uses these guarantees to develop "academic pathway guides" for accurate student advising. This is possible because the OTM and TAGs are guarantees that cut across all public colleges and universities.

The institutional advising guides on pages 39 and 40 illustrate how Cuyahoga Community College (CCC) uses such guides for advising, in this case with students exploring a transfer to Kent State University. As one counselor noted, the planning guide option, with CCC as the cross-referenced school, provides the student with a color-coded graduation check list, again indicating the CCC courses.

TRANSFER GUIDE
CUYAHOGA COMMUNITY COLLEGE
KENT STATE UNIVERSITY 2007-2008
Liberal Education Requirements

This guide is provided by the Counseling Office of Cuyahoga Community College for planning purposes only and must be used in conjunction with the KSU Catalog 2007-08 and in communication with the receiving institution. Choosing Cuyahoga Community College coursework from the courses listed in this guide should optimize the applicability of transfer credit toward program requirements at Kent State University. Courses in the students major field will not count toward the completion of any Liberal Education Requirements.

Composition
English 1010, 1020
Mathematics and Critical Reasoning - 3 Semester Credits
Math 1160, 1200, 1250, 1360, 1370, 1380, 1420, 1470, 1480, 1510, 1521, 1580, 1610, 1620, 2310, 2410, 2520
Philosophy 1020
Humanities and Fine Arts - 9 Semester Credits
Humanities: Arts and Sciences - one course must be chosen from the following
English 2310, 2320, 2350, 2360, 2410, 2420, 2430, **2510, 2520**, 2601, 2710
French 2420
German 2420
History **1010**, **1020**, **1510**, **1520**, **1610**, **1700, 2051, 2060, 2070, 2150, 2160, 2660, 2800**
Humanities 1010, 1020, 1030
Italian 2420
Philosophy 1000, **1010**, **2010**, **2020**, 2031, 2040, 2050
Religion 1010, **2010, 2020, 2030, 2040, 2050, 2060**
Russian 2420
Spanish 2420, 2430
Humanities in Fine and Professional Arts: Communication Studies
Speech **2160**
Fine Arts: In Fine and Professional Arts - one course must be chosen from the following
Art 1010, 2020, 2030, **1040**
Dance **1100**
Journalism and Mass Communication 1310
Music 1010, **1020, 1030, 1040, 1050**, 2030, 2500, 2510, **2520, 2530**
Theatre **1010**, 1100, 1300, 1400, 1410, 2210, 2220
Social Sciences - 6 semester credits from two different departments
Anthropology **1010, 1030, 2010**
Economics 1210, 1220, 1800, 2610, 2620
French 1100
Geography **1010**, 1030, **1050**, 1510
History **1630**
Italian 1100
Political Science **1010**, 1020, 1100, **2030**, **2060, 2070**
Psychology 1010, 2010, 2020, 2040, 2050, 2060, 2080, 2100, 2800
Social Science 1030, 1040
Sociology **1010**, 1020, **1210**, **2010**, **2100**, **2310**, 2510, **2550**
Urban Studies **1010**, 1020, 1120, **2020**, 2070, **2640**
Basic Sciences - 6 Semester Credits (at least one laboratory course must be selected)
Anthropology 1020
Bio 1040/L, 1050/L, 1060/L, 1100, 1410, 1420, 1500, 1510, 2010, 2050, 2060, 2070, 2100, 2150, 2330, 2340, 2500
Chemistry 1010, 1020, 1300, 130L, 1310, 131L, 2300, 2310, 2400
Earth Science 1310, 131L 1410, 141L, 1510, 151L, 1610, 161L, 2300
Physical Science 1010, 101L (PHY-LER), 1020, 102L (CHEM-LER), 1030, 103L (GEOL-LER)
Physics 1050, 1210, 1220, 2310, 2320, 2400
Additional hours – choose 6 more semester credits from above

Two diversity courses are required. At least one must be in the LERS (**Boldface**) but not in the student's major must be chosen. Other options are available at KSU and may be part of the student's major.
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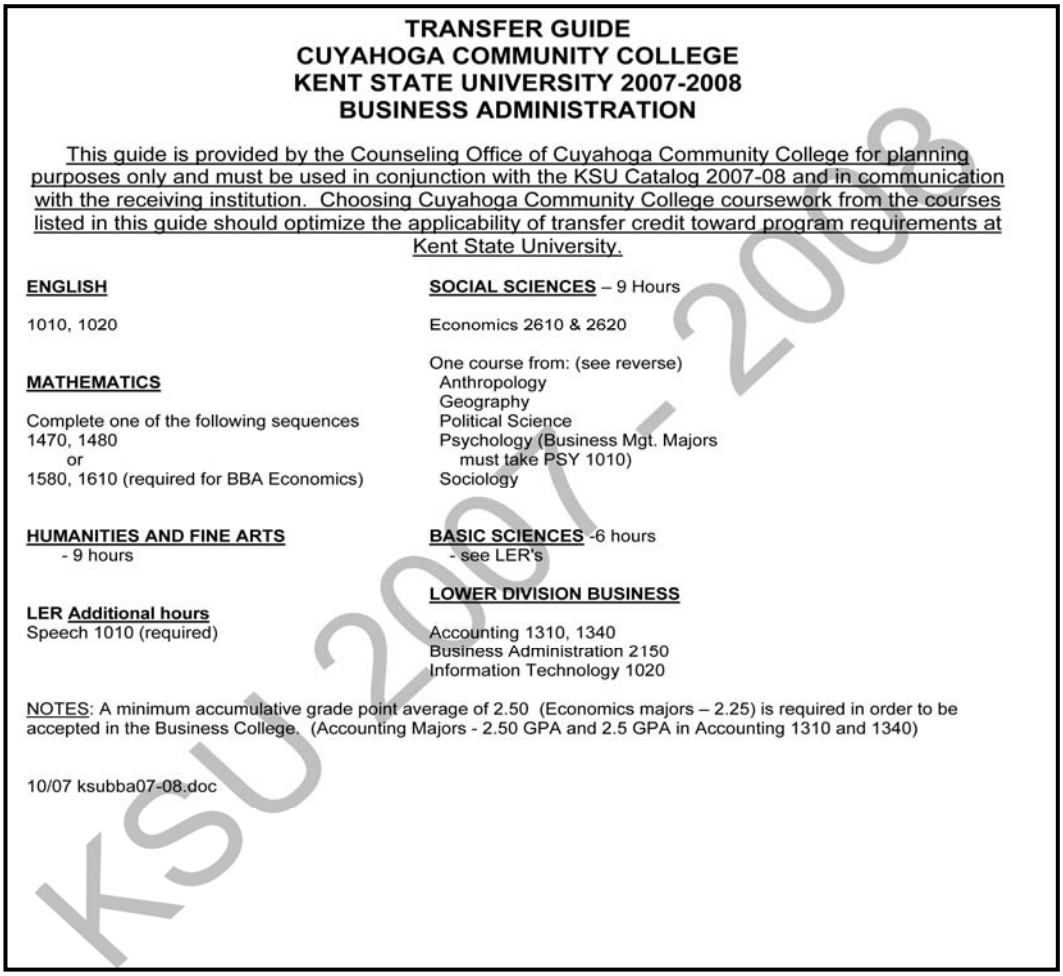

TRANSFER GUIDE
CUYAHOGA COMMUNITY COLLEGE
KENT STATE UNIVERSITY 2007-2008
BUSINESS ADMINISTRATION

This guide is provided by the Counseling Office of Cuyahoga Community College for planning purposes only and must be used in conjunction with the KSU Catalog 2007-08 and in communication with the receiving institution. Choosing Cuyahoga Community College coursework from the courses listed in this guide should optimize the applicability of transfer credit toward program requirements at Kent State University.

ENGLISH

1010, 1020

MATHEMATICS

Complete one of the following sequences
1470, 1480
or
1580, 1610 (required for BBA Economics)

HUMANITIES AND FINE ARTS
- 9 hours

LER Additional hours
Speech 1010 (required)

SOCIAL SCIENCES – 9 Hours

Economics 2610 & 2620

One course from: (see reverse)
Anthropology
Geography
Political Science
Psychology (Business Mgt. Majors must take PSY 1010)
Sociology

BASIC SCIENCES -6 hours
- see LER's

LOWER DIVISION BUSINESS

Accounting 1310, 1340
Business Administration 2150
Information Technology 1020

NOTES: A minimum accumulative grade point average of 2.50 (Economics majors – 2.25) is required in order to be accepted in the Business College. (Accounting Majors - 2.50 GPA and 2.5 GPA in Accounting 1310 and 1340)

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KSU 2007 - 2008

Using Technology in Advising

The Board of Regents created a web-based student "portal" that provides comprehensive educational information to all Ohio citizens. It is a "one-stop shop" for all information on education from pre-school through college and careers. Everything from being Kindergarten-ready to finding a career or locating financial aid is easily obtained through the Ohio College Access Portal (www.OhioCAP.org).

The portal has three windows or entry points – one for students, one for parents and one for adult learners (i.e., Ohio's returning workforce).[19] This portal is not unique; many states have such a site in varying forms. However, by highlighting credit transfer and student mobility, Ohio's portal integrates these issues with other elements of academic planning and enhances students' and families' ability to address transfer guarantee issues and the advantages of beginning at the least cost option. Over time, these services and resources will be further integrated with the University System of Ohio database to form an even more powerful advising and information system.

Areas for Further Development: E-Advising

The next step in a system-wide approach to helping learners earn degrees and certificates is to provide a truly comprehensive process that is not location bound. Such a process will assist students where they are geographically and in the education system, give them the specific information they need and then connect them with the college or university that can provide them the opportunity to complete their programs. The student portal is a first step in this direction. As student mobility increases and distance learning course and degree opportunities expand, so does the need for a quality system for on-line advising.

[19] The Ohio College Access Portal may be accessed at http://www.ohiocap.org.

The firm redLantern, which now owns, develops and markets u.select – formerly CAS – provides another piece of the solution. It offers self-advising capabilities between institutions by giving students bi-lateral transfer information. It also allows students, alone or in concert with an advisor, to review academic history and determine how the students' past academic coursework apply to current career goals. On a broader scale, a distance advising system that will give a student – or potential student – the opportunity to "meet" with a college advisor to discuss specific course and program options must be developed.

Through the use of authentication software, chat functions and document imaging, many individual colleges and universities are now able to offer students comprehensive advising via the web and secure portal access to both their on-ground and on-line students. Providing this capacity on a statewide basis will be integral for the development of the University System of Ohio.

Web technology makes it possible for colleges and universities to assemble in one location all services for students. Using the Web's capability in a student self-service environment creates an opportunity for quality advisor-student contact.

National Academic Advising Association (NACADA)

Ohio's Student Mobility Vision

It is not difficult to envision a future in which students can use a smart phone with an "Ohio Education App" – to access information about their learning options – from academic supports, math tutorials, college applications and other transition tools to information about a wide range of learning opportunities for traditional students and adult learners.

With all of our efforts to improve the quality of advising, Ohio's efforts are still inadequate in reaching all users. Additional strategies for expanding and improving the quality of advising are required and a broad-based, outreach and marketing campaign is needed to explain and inform educators, students and the citizens of the state the new options, opportunities and guarantees in place for the new student mobility system. Areas for future development include the following:

- Designing and offering formalized training programs at both the state and institutional levels to ensure a transfer of knowledge when turnover occurs (high degree of turnover in key positions).
- Becoming more user friendly with electronic tools available to navigate the system and a transparency of how the system operates.
- Improving outreach and marketing for all potential students from high school through returning (adult) workforce.
- Development of new informational materials with dissemination to a variety of audiences, including the use of emerging mobile technologies and other "smart media".
- Increasing the "reach" of the Ohio Transfer Council to expand its work with high schools, parent groups and businesses.

The awareness and use of the student mobility system continues to be one of our greatest challenges. We are always on the lookout for new strategies and communications opportunities. Any entity planning to develop or expand credit transfer systems would be wise to address the issue early – and often.

CHAPTER FIVE

Some Lessons Learned from Ohio's Experience

The primer demonstrates how one state responded to the challenges of developing a comprehensive transfer system that connects high schools, adult career centers, colleges and universities – and the workplace through credit confirmation and guaranteed transfer. Ohio's story confirms the importance of disciplined, well-articulated, guaranteed pathways; the value of cutting-edge technology; the benefits of solid advising; and the contributions of effective, determined leadership.

At the outset, we cautioned that this analysis would not result in any foolproof recipes that can be followed in virtually every setting. However, we did promise to provide some compelling insights – lessons learned that could be applied elsewhere by educators and policy leaders facing similar challenges.

Ohio's experience offers substantial insights for those who are working on the national articulation and transfer scene. Most importantly, it highlights the range of issues involved in developing a comprehensive *student mobility system* – one that pushes well beyond the traditional, one-dimensional approaches of the two-year-to-university credit transfer by encompassing the K-12 system, returning workforce and college continuum.

Numerous lessons for managing and adjudicating a student mobility system could be drawn from the Ohio story. Yet, resisting the temptation to provide a prodigious list of "lessons learned," we're going to keep it short and simple. Being an avid baseball fan I'm going to draw upon the wisdom of Yogi Berra to help guide the way.

LESSON #1: Developing a student mobility system isn't as easy as you might think.

Yogi is credited with saying, *"If we had to do it over again, we wouldn't."* Our "take" is a bit different. Of course, we'd do it over again – but perhaps not in the same way. Experience has taught us to be a bit more realistic about what can be accomplished in a given timeframe, particularly at the beginning of the development process. It has shown us the importance of thinking in terms of steps or phases – not to take on too much all at once.

For example, when the Regents began to develop the Ohio TAGs, it thought in terms of eight broad TAGs – one each in the areas of Arts and Humanities, Education, Engineering and Engineering Technology, Business, Social & Behavioral Sciences, Science & Mathematics, Health and Communications. Once the work began, it became increasingly clear that there was not enough commonality among courses in each of the eight areas to form a viable pathway (TAG). So the decision was made to delve deeper into each of the areas or sub-specialties, requiring the development of 38 TAGs all at once!

Reflecting on that decision, it's now clear that the Regents would have been better off focusing initially on fewer TAGs – those that accommodated the largest number of transfers. Later, with a validated process in place, it would have been much easier to go back and add additional disciplines. However, that was not known when the process was started.

LESSON #2: Student mobility is everyone's issue.

"Okay you guys, pair up in threes," Yogi said. He didn't have it quite right, but the sentiment was there. The responsibility for system development is a shared responsibility and campuses have as much "skin in the game" as the state's higher education governing or coordinating agency. In fact, the state's colleges and universities have more to gain, or to lose.

Some state officials, including state legislators, say "fix it, just make the campuses participate fairly in transfer." The real world doesn't operate this way and "command and control" approaches are destined to fail. Student learning and mobility, at best, are non-linear and messy affairs with multiple routes to the same objective.

This can be a good thing. If campuses don't value these pathways as viable, there are many ways to get around them. Education reform is well schooled in this area. Just think about all of the new reform packages – the "flavors of the month" – that teachers and faculty have to endure. So the attitude of "here we go again" is rather understandable.

In higher education, inertia is a powerful force, and the "just wait it out, it will go away" mentality can be pervasive. So it is important to acknowledge that the "push" we got from legislative directives and budgetary mandates contributed to our success in bringing down the barriers surrounding credit transfer. They provided the Ohio Board of Regents with the clout needed to initiate work and sent a strong message to the campuses that this was something to be taken seriously. Also important was the active involvement of prominent legislators who helped convince campuses that change was inevitable.

LESSON #3: It's all about the students.

Most people would say that this lesson is pretty obvious, yet experience tells us that it is often ignored. In a perfect world, a system designed to help students easily navigate institutions and academic programs to their highest learning needs would put students at the center. Meeting the needs of students would be Priority One.

But the world isn't perfect. Yogi Berra told us that: *"If the world was perfect, it wouldn't be.* The interests of students often have become secondary in battles over turf, funding and reputation. Frequently, transfer students have been treated like second-class citizens. Opportunities for transfer often have been limited by bi-lateral agreements that all too frequently allow the receiving institutions to dictate the transfer rules.

In building a student mobility system, state policy makers and institution leaders need to ensure that everything works to facilitate effective credit transfer. This must be the primary goal. In Yogi's words, *"If you don't set goals, you can't regret not reaching them."*

Articulation is the key to reaching this goal. It allows institutions to develop and match learning outcomes – to establish equivalency through agreements that define course outcomes and rigor. This applies to not only the traditional college courses, but also to the adult returning workforce and courses offered through adult career centers. This same mechanism can be applied to other learning situations. College credit for apprentice programs, or credit for specific business-sponsored workshops or other experiences, is possible by agreed upon outcome matches. We tend to believe that unless it is offered on a college campus, it is not worthy of college credit. The development and matching of learning outcomes provides for more credit flexibility and ensures appropriate rigor.

LESSON #4: Mobility systems don't matter if students, faculty and staff aren't aware of them and don't know how to use them.

Despite Yogi Berra's observation – *"Even Napoleon had his Watergate*" – accurate, clear and timely communication is critically important. Students must be familiar with all of their mobility opportunities. Similarly, faculty and staff must be sufficiently informed to give students the kind of advice that allows them to take full advantage of their options.

In building a student mobility system, this may be the most difficult challenge of all – in fact, it could be Waterloo for those who fail to develop and carry out a comprehensive communication strategy. For this reason, Ohio developed new networks and used a number of existing ones to spread the word. This continues to be one of the project's biggest challenges, even though the Regents have the help of the following initiatives:

- The Ohio Transfer Council (discussed in Chapter 4) that is composed of university and college advisors and admission officers (www.ohiotranfer.org).
- The Articulation and Transfer Advisory Council consisting of a representative from all public campuses, a representative of the organization of selective private colleges, and representatives of P-12 superintendents.
- A network of faculty and administrators designated as the articulation/transfer contact person on each campus.

The message here is to begin to develop a communication and marketing strategy from the start – and to build on existing channels or structures for information flow.

LESSON #5: Student mobility initiatives must be rooted in a long-term vision and supported by a strategic action agenda.

One of Yogi's most popular aphorisms is, *"If you don't know where you're going, you might not get there."* It reminds us of the importance of generating, at the outset, an imaginable picture of the future and a work agenda for getting there. It points to the value of creating a general direction of change with guideposts, goals to be achieved and a roadmap to success.

Ohio's experience confirms this value. It validates the assertion that a clear, long-term vision can bring people to and keep them at the table. It can simplify more detailed decisions, motivate people to act and resolve conflicts that could otherwise delay implementation.

One of the most difficult aspects of creating an effective student mobility system is developing trust among the participants. In the final analysis, it's everyone's system – no one should lose. It has to be a "win-win" environment – a situation in which all institutions enroll more students and have a far better articulated program pathway for students that reaches down into the state's secondary schools.

Of course, that is far easier to say than to achieve. So the engagement of campuses and faculty is the most crucial element in a viable system. The Ohio Board of Regents was very focused in obtaining buy-in from campuses and steadfast in its resolve to develop and implement a statewide credit transfer system. The involvement of over 600 faculty statewide speaks to the level of engagement. It takes time for trust to develop among campuses (both two and four year) and with the state. The first few sessions may be rather hectic, but consensus will begin to emerge as trust widens. Understand from the start, you are not going to have a perfect transfer arrangement from the first go around. It will take continuing work and modification.

LESSON #6: Student mobility initiatives must be well-organized, backed by the resources needed to implement the system.

Yogi Berra's comment, "*I'm not going to buy the kids an encyclopedia; let them walk to school like I did*," provides the basis for this lesson. Yogi didn't have the benefit of technology tools to make the work easier---but we do! Through technology, TAGs and the state's course equivalencies, student mobility can be made easier for students and campuses.

A good rule of thumb is: If you can use technology to accomplish the goal, use it! Don't make the system labor intensive. Don't be afraid to ask for assistance – there are a number of companies that can help you develop technology products to meet transfer needs. There are experts who can help with the development of an electronic transcript system. In addition, there are other campuses and states across the nation that have developed similar programs and would be willing to work with you or share their products. So don't try to do it all. Capitalize on the expertise and experiences of others and decentralize your processes wherever possible. It is critically important, however, to have a dedicated "line" or budget for this work. Changing cultures and systems is not easy and is costly – it can't be done by cutting corners.

LESSON #7: Leadership counts.

Years after his playing and coaching years were over, Yogi Berra wrote that he'd never really been trained. He said he played baseball by instinct, yet he admitted to the good fortune of playing for Casey Stengel – a mentor, coach and leader. About Casey, Berra said during his playing years, *"He's learning me all his experience."*

Student mobility initiatives need leaders – not just ceremonial leaders for a cause, but people who are able to create a vision, get people to work together to achieve that vision, assist in removing the obstacles to change, and establish (and support) practices that make credit transfer a reality.

Ohio's experience suggests that while state-level lawmakers can play important roles, campus leaders need to be identified on at least two levels. First, there is a need for recognized leaders – hopefully presidents and provosts – who have a passion for, and commitment to, student mobility. They must be engaged for the long haul and must be willing to put time, effort and longevity into the work – always keeping an eye on the "prize" of developing and sustaining workable transfer opportunities. Ohio is fortunate to have 20 years of continuing leadership from a community college president and five years from the last university president as influential co-chairs of the Articulation and Transfer Advisory Council. This provides for not only consistency but persistence in the student mobility agenda.

There is a second layer of needed leadership – campus-based people who bring special expertise regarding articulation/transfer and are positioned to interface with state officials. These leaders must be willing to contribute to the day-to-day work that student mobility requires. They also must use their knowledge and ability to carry the credit transfer message across their campuses. Ohio has been blessed with strong supply of such leaders at both levels. Our success owes much to their committed efforts.

# # #

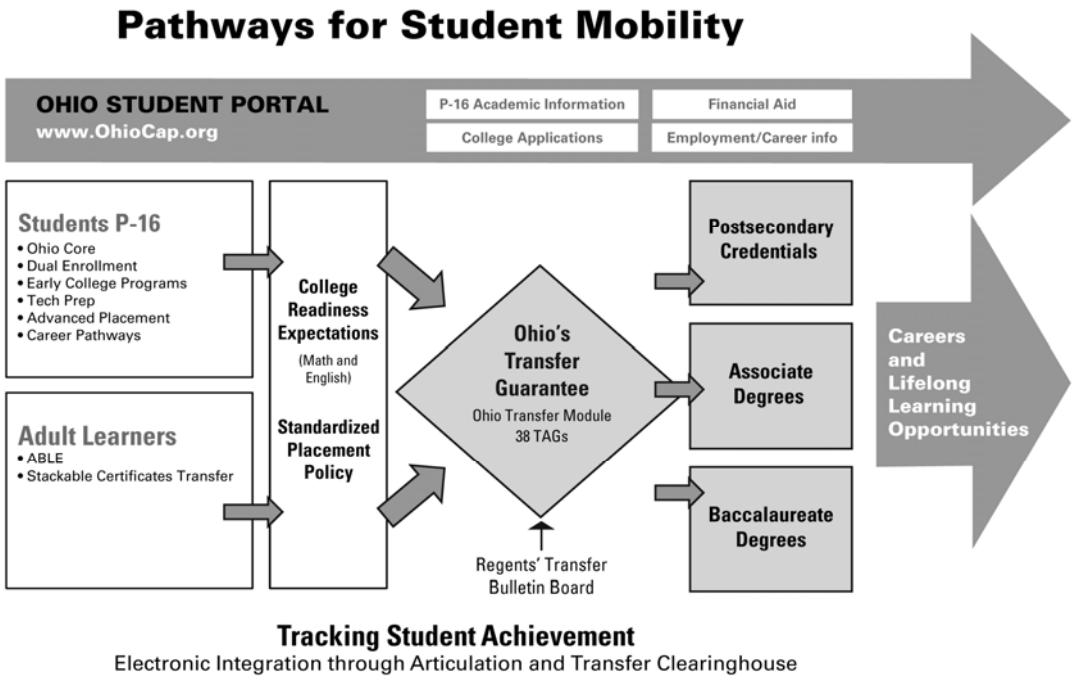
Good luck in your endeavors – it will all work out. There will be difficult times, but don't be surprised if you hear Yogi saying, *"We're lost, but we're making good time."*

CHAPTER SIX

Next Steps for Student Mobility

Built on Ohio's foundation of credit transfer – with the numerous changes and spin-offs that continue to develop – a dedicated student mobility system is emerging. A student-centered focus will continue to strengthen and there will be new opportunities for educational advancement. Technology will improve access to time-sensitive information and instruction that is less constrained by time and place.

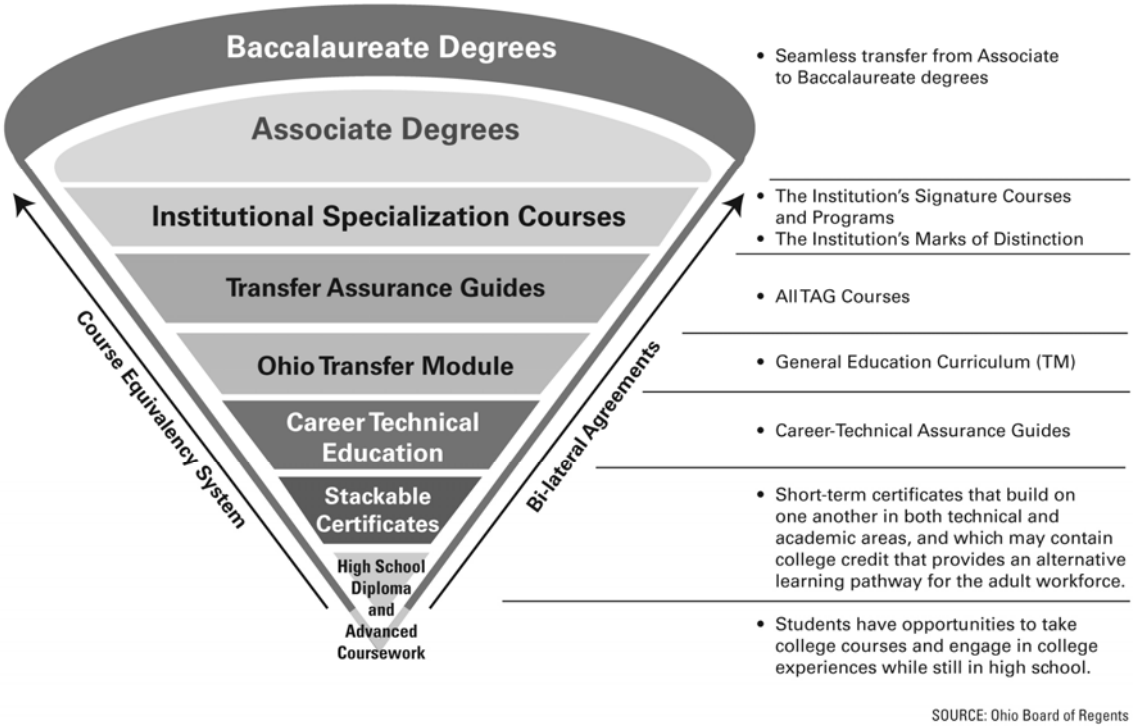
The diagram below gives us an idea of what Ohio's student mobility system looks like today, with its numerous entry points and multiple pathways that allow all Ohioans to pursue new learning opportunities – anytime and anywhere. Yet, even with the advances of the past decade and a half, the student mobility system has not yet evolved to where we ultimately want it to be.



Experience has taught that the educational continuum isn't always a straight line. It has confirmed that non-traditional entry and re-entry points can become the norm. It has contributed to a deeper understanding of the importance of and the need to work more closely with the secondary education system in which learners can accumulate credits across the educational spectrum, with the opportunity to record these credits on a personalized e-learn account.

Experience also has shown us the value of blurring the boundaries between levels of education – relying more on actual performance than on historical notions of time or sequence. Toward this end, Ohio has provided a sound infrastructure for a student mobility system that includes secondary schools, college and universities, as well as adult career centers, for traditional students and the returning workforce. This infrastructure, as depicted in Learning-Mobility Continuum graphic on page 48 provides a solid base for the next wave of education improvement.

The Learning-Mobility Continuum



SOURCE: Ohio Board of Regents

Looking To the Future

As a state, Ohio is quickly coming to the point where the desire and need for more participation in higher education is clashing with the financial ability to support this transformation in the traditional manner – both in terms of costs to educate and the infrastructure required. It is clear that *another approach* is needed – one that reaches across levels of education and beyond the boundaries of discrete institutions of higher learning. Without such an approach, Ohio is not going to be able to attract increasing numbers of students into and through postsecondary education in order to build the workforce that will make our state competitive in the 21st century global economy. Also, without this new approach, Ohio will not have the educated population required for thoughtful, vibrant, democratic communities.

Today, we may not know exactly how this emerging system will operate, but we surely can identify and grasp the parameters that will shape its evolution. For example, we know that content will not be confined to the classroom, but increasingly will be "housed" on the web and manipulated through learning/demonstration centers. We know that progress won't be interpreted by time in course, but by mastery of knowledge and skills. We know that the notion of "what's worth knowing" is being complemented by "how one knows." In addition, we know that the emphasis on access already is being superseded by a focus on achievement and success.

In this transformation, student mobility will be one of the primary levers of change. By expanding learning opportunities for all students, it has the capacity to narrow the divide between those who are prepared for higher learning and those who are not ready to succeed (often due to the geography, socioeconomic status and family background). It can respond to the needs of students who require a substantially longer period of time to meet their learning objectives. It also encourages the blurring of traditional boundaries along the education pipeline, driven in large part by a growing consensus that the entire educational system from pre-school through college needs to be redesigned.

To be sure, this kind of change won't be the result of tinkering. It will have to be comprehensive. It will require the challenging of existing mindsets and the "unlearning" of some of the things we think we know. It will build upon some big ideas and the scaling up of proven practices.[20]

Well-designed and skillfully executed, student mobility is one of those practices. It can lead us to a system that:

- connects and supports learning and demonstrated achievement from birth through career, and offers a new social compact that ensures Ohio's superiority in education and technology-related careers;
- uses everyday technology – including mobile technologies such as smart phones – to give students access to education, tutoring and other forms of learning assistance;
- places value on learning hierarchies that give middle-school and high-school students, as well as beginning college students, a curriculum in which courses are structured around and matched to well-defined outcomes; and
- provides new, challenging educational pathways that lead to successful college participation, with an expectation that all students will achieve mobility through the secondary system into some form of postsecondary education, and puts learning in the hands of the learner while providing easily accessible technology tools to navigate the system for college, careers and beyond.

It's a compelling vision – a learning-mobility continuum that attracts, retains and graduates students, giving them a lifetime of opportunities. Yet, this continuum should not be reserved for the young or for those whom we classify as "traditional" students. It should be available to all learners, regardless of age or geography.

So imagine an education system that extends these conditions to adult learners, including those returning to the classroom from the workforce. Imagine these conditions being met in adult career-technical programs and community and four-year colleges, with assurances that appropriate past credits will apply to certificate and degree programs in a variety of ways:

- Remedial and developmental learning opportunities – from Adult Basic Literacy and Education (ABLE) to college credit based on, or combined with actual work experience, have been developed and are accessible, and all learning credits travel with the student and are recognized, in full, at the next destination or level;
- Transparent pathways to higher learning have been established and are accessible via the web to adults already in the workforce and work-based certificates – hierarchically arranged by career cluster – guide all learners to their highest educational aspiration;
- Information about courses and careers is readily available – at adult learners' fingertips for easy access and use – though the Ohio Education App (just as information about their financial status is available electronically either online or through the ubiquitous ATM).
- Courses, programs and degrees are Web-based and drop-in learning centers are available on campuses, providing instant access to low-cost programs that encourage continuing educational attainment, and continued learning is the expectation for all students – and the capacity to control both the pace and direction of educational attainment shifts from institutions to learners

Building an effective credit transfer and student mobility system poses many challenges. Experience has taught Ohio that.

The task you are facing demands system transformation. It requires radical change, both in the way people think about learning and in the way learners acquire the knowledge and the critical thinking skills that enhance participatory democracy, contribute to the resolution of pressing public issues and serve the common good.

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[20] For an interesting discussion of system redesign, see Joseph P. McDonald, Emily J. Klein and Meg Riordan, *Going to Scale with New School Designs: Reinventing High School.* (2009) New York: Teachers College Press.

In essence, this is Ohio's student mobility vision, which reflects an understanding that learning should not be the sole province of a select few, but rather the right of all citizens to reach their highest educational aspirations.

While building on historical and current approaches that have increased college attainment, Ohio's future learning system will most likely function in a very different way. Classroom–centered learning will be enhanced by web-based delivery, campus drop-in centers, documented learning and an emphasis on certificates for credit. The groundwork for this new system will be the equivalency of knowledge for credit. This new reality will be driven by the power of credit transfer and the value of student mobility.

APPENDIX A

Guiding Principles for the Development of the Transfer Assurance Guides

Ohio's Articulation and Transfer Policy (1990) was a major achievement in improving the mobility of students among colleges and universities within the state. Policy revisions recommended by the Articulation and Transfer Advisory Council (2004), and further codified by the Ohio General Assembly in H. B. 95, extended the impact of the existing policy through more precise advising and the assurance of credit transfer and the application of credits to academic degree/program requirements. A central feature of the enhanced policy is the development of Transfer Assurance Guides (TAGs). TAGs are being developed to assist students in more than 38 different degree pathways and are guided by the following principles:

1. The new initiative builds upon the original Articulation and Transfer Policy adopted by the Ohio Board of Regents in 1990. The Ohio Transfer Module continues to be the foundation of this work and provides students the opportunity to transfer courses as a block or on an individual course basis.
2. The purpose of the TAG is to allow students to transfer, in a simple and direct manner, a core of courses that will count toward the major program.
3. The recommendations of the Articulation and Transfer Advisory Council and the stipulations of H.B. 95 enhance the current policy through the creation of Transfer Assurance Guides (TAGs) that provide more precise student advising and guarantee the application of credits within the TAG to the major. TAGs are groups of foundational courses that represent a commonly accepted pathway to majors within the Bachelor's degree. Courses or course sequences identified as being a part of the TAG may be offered at any higher education institution in Ohio.
4. The goal of a TAG is to recognize comparable, compatible and equivalent courses at or above the 70 percent standard of equivalency adopted by the Articulation and Transfer Advisory Council. TAGs apply across, at least, all public higher education institutions in Ohio and embody commonly accepted pathways to majors within the Bachelor's degree. This does not alter the mission or degree authority of any institution; it does provide guaranteed pathways that enable students to reach their bachelor's degree goals in the most efficient manner.
5. The TAGs are composed of courses and learning outcomes. Consensus on courses commonly included in particular Bachelor's degree discipline pathways are based on the evaluation of the content and performance expectations on a course-by-course basis within each TAG. When consensus is established, students are assured not only of the equivalency of the courses, but of their application to the degree objective.
6. Transfer students and students who begin and end study at the same institution will be treated equitably with regard to institutional or major/program admissions requirements. All students will be held accountable to the same admissions and graduation expectations such as grade point average requirements, residency requirements, and performance requirements/portfolio requirements specific to certain majors.
7. The role of faculty in the development of the TAGs is paramount and colleges and universities will continue to have ample opportunity to review and comment on the work of the panels.

8. All campuses are expected to comply with the revised Articulation and Transfer Policy and guarantee the transfer of courses in the TAG for application to degree/program requirements. Campuses may have specific curricular issues in the implementation of TAGs for certain disciplinary fields. An appeals process for institutions will be developed to focus on such substantive curricular/programmatic issues in the implementation of the TAGs. The Oversight Committee will handle the appeals process and is the final arbiter of appeals, using the faculty subcommittee of the Articulation and Transfer Advisory Council as appropriate. The Oversight Committee will report on a regular basis to the Articulation and Transfer Advisory Council.

The existing Articulation and Transfer Policy is significantly enhanced by the development of the Transfer Assurance Guides. The above principles were developed to provide a context for understanding the enhancements to the policy and to elucidate the TAGs. The principles are a result of the leadership of the Oversight Committee of the Articulation and Transfer Advisory Council, a representative committee drawn from various segments of the higher education community.

APPENDIX B

TRANSFER MODULE

INSTITUTION: The University of Akron

X Semester Hours _____ Quarter Hours Effective Date: Spring 2008

(Hours Precede Course Number)

Areas	(A) Minimum General Education Requirements Applied to TM (24 sem or 36 qtr)	(B) Additional General Education Requirements Applied to TM (12-16 sem or 18-24 qtr)	(C) Interdisciplinary Hours Applied to TM within Areas I-V (Ohio Articulation & Transfer Policy: Appendix B)	General Education Requirements Beyond the TM for Graduation (Courses listed in this column are not guaranteed to transfer)
I English/Oral Communication (Oral Communication – column B) **Minimum 3 sem/5 qtr**	(4) 2020:121-English Or (4) 3300:111-English Composition I Or (4) 3300:113-African American Language & Culture I: College Composition	(3) 2020:222-Technical Report Writing Or (3) 3300:112-English Composition II Or (3) 3300:114-African American Language & Culture II: College Compostion (3) 7600:105-Introduction to Public Speaking Or (3) 7600:106-Effective Oral Communication Or (3) 2540:263-Professional Communications & Presentations		
II Mathematics, Statistics or Formal Logic Minimum 3 sem/3 qtr	Choose 3 credits (2/2) 2030:152 & 153-Technical Mathematics II & III (4) 2030:161-Mathematics for Modern Technology (4) 3450:145-College Algebra (4) 3450:149-Precalculus Mathematics (3) 3450:210-Calculus with Business Applications (4) 3450:221-Analytic Geometry-Calculus I (3) 3450:260-Mathematics for Elementary School Teachers II (2/2) 3470:261 & 262-Introductory Statistics I & II			
III *Arts/Humanities Minimum 6 sem/9 qtr	Required of All (4) 3400:210-Humanities in the Western Tradition I: Antiquity to the Renaissance 2 courses from 2 different sets (list below)	Additional 3 credit hours from Transfer Module list		Additional 3 hours from approved General Education list from two different sets

Revised 08/17/07

IV *Social Science Minimum 6 sem/9 qtr	(3) Select one course from the list: (list below)	Additional (3) credits from Transfer Module list, from a different set than list corresponding with column A		
V Natural Science Minimum 6 sem/9 qtr *One Lab course required*	(4) Select one course each from a minimum of two different sets. One course must include a lab. (List below)	(6) Additional credits from Transfer Module list from a set other than course selected from column A.		
Sub-Total of Hours	**29**	**12**	**4**	Courses listed in this column are not guaranteed to transfer

**Courses in Areas III and IV must be from two different disciplines.*

TRANSFER MODULE TOTAL HOURS 42
(Total of Columns A, B, and C)
The Transfer Module contains 36-40 semester hours or 54-60 quarter hours of course credit.
(Note: You can obtain a catalog/brochure that lists the TM "approved" courses from the institution.

Arts & Humanities:

Set one:
(3) 7100:210 – Visual Arts Awareness
(3) 7500:201 – Exploring Music: Bach to Rock
(3) 7800:301 – Introduction to Theatre Through Film
(3) 7900:200 – Viewing Dance

Set two:
(3) 3200:220 – Introduction to the Ancient World
(3) 3200:230 – Sports & Society in Ancient Greece & Rome
(3) 3200:289 – Mythology of Ancient Greece
(3) 3600:101 – Introduction to Philosophy
(3) 3600:120 – Introduction to Ethics
(3) 3600:170 – Introduction to Logics

Set three:
(3) 3200:361 – The Literature of Greece
(3) 3300:250 – Classic and Contemporary Literature
(3) 3300:252 – Shakespeare and His World
(3) 3580:350 – The Literature of Spanish-America in Translation

Set four:
(3) 3400:211 – Humanities in the Western Tradition II: Reformation to the Present

Social Sciences:

Set one: Economics
(3) 2040:247 – Survey of Basic Economics
(3) 3250:100 – Introduction to Economics
(3) 3250:200 – Principles of Microeconomics
(3) 3250:244 – Introduction to Economic Analysis

Set two: Geography
(3) 3350:100 – Introduction to Geography

Set three: Government/Politics
(3) 2040:242 – American Urban Society
(3) 2040:243 – Contemporary Global Issues
(4) 3700:100 – Government and Politics in the United States
(3) 3700:150 – World Politics and Governments

Set four: Psychology
(3) 2040:240 – Human Relations
(2) 2040:244 – Death and Dying
(3) 3750:100 – Introduction to Psychology

Set five: Sociology/Anthropology
(2) 2040:256 – Diversity in American Society
(4) 3230:150 – Cultural Anthropology
(4) 3850:100 – Introduction to Sociology

Set six: United States History
(4) 3400:250 – United States History to 1877
(4) 3400:251 – United States History since 1877

Set seven: Science/Technology/Society
(2) 2040:241 – Technology and Human Values
(3) 3240:100 – Introduction to Archaeology
(3) 3600:125 – Theory and Evidence

Revised 08/17/07

Natural Sciences:

Set one: Anthropology
(4) 3230:151 – Human Evolution

Set two: Biology
(3) 2780:106 – Anatomy and Physiology for Allied Health I
(3) 2780:107 – Anatomy and Physiology for Allied Health II
(4) 3100:100 – Introduction to Botany
(4) 3100:101 – Introduction to Zoology
(4) 3100:103 – Natural Science: Biology
(4) 3100:111 – Principles of Biology I
(4) 3100:112 – Principles of Biology II
(3) 3100:130 – Principles of Microbiology
(4) 3100:208 Human Anatomy & Physiology I
(4) 3100:209 Human Anatomy & Physiology II

Set three: Chemistry
(3) 2820:105 – Basic Chemistry
(3) 2820:111 – Introductory Chemistry
(3) 2820:112 – Introductory and Analytical Chemistry
(3) 3150:100 – Chemistry and Society
(4) 3150:101 – Chemistry for Everyone
(4) 3150:110 & 111 – Introduction to General Organic and Biochemistry I (Lecture & Lab)
(4) 3150:112 & 113 – Introduction to General Organic and Biochemistry II (Lecture & Lab)
(4) 3150:151 & 152 – Principles of Chemistry I (Lecture & Lab)
(3) 3150:153 – Principles of Chemistry II

Set four: Environmental Studies

Set five: Geology
(3) 3370:100 – Earth Science
(4) 3370:101 – Introductory Physical Geology
(3) 3370:103 – Natural Science: Geology
(3) 3370:171 – Introductions to the Oceans
(3) 3370:200 – Environmental Geology
(1) 3370:201 – Exercises in Environmental Geology I
(1) 3370:203 – Exercises in Environmental Geology II

Set six: Physics
(2) 2820:161 – Technical Physics: Mechanics I
(2) 2820:162 – Technical Physics: Mechanics II
(2) 2820:163 – Technical Physics: Electricity and Magnetism
(2) 2820:164 – Technical Physics: Heat and Light
(4) 3650:130 – Descriptive Astronomy
(4) 3650:133 – Music, Sound and Physics
(4) 3650:137 – Light

Revised 08/17/07

TRANSFER MODULE

INSTITUTION: Lakeland Community College

X Semester Hours _____ Quarter Hours Effective Date: Fall 2007

(Hours Precede Course Number)

Areas	(A) Minimum General Education Requirements Applied to TM (24 sem or 36 qtr)	(B) Additional General Education Requirements Applied to TM (12-16 sem or 18-24 qtr)	(C) Interdisciplinary Hours Applied to TM within Areas I-V (Ohio Articulation & Transfer Policy: Appendix B)	General Education Requirements Beyond the TM for Graduation (Courses listed in this column are not guaranteed to transfer)
I English/Oral Communication (Oral Communication – column B) Minimum 3 sem/5 qtr	3 ENGL 1110 OR 4 ENGL 1111 Appendix A*	3 ENGL 1120 OR 3 ENGL 1121 3 SPCH 1000 Appendix A*		
II Mathematics, Statistics or Formal Logic Minimum 3 sem/3 qtr	One course (3-5 hours) chosen from Appendix B*			
III *Arts/Humanities Minimum 6 sem/9 qtr	6 hours chosen from Appendix C*			AA degree: 4 additional hours AS degree: 3 additional hours
IV *Social Science Minimum 6 sem/9 qtr	6 hours chosen from Appendix D*. One Behavioral Science and one Macro Social Science course			4 additional hours
V Natural Science Minimum 6 sem/9 qtr *One Lab course required*	6 hours chosen from Appendix E*. Include at least one lab course			AS degree: 11 additional hours
Interdisciplinary Maximum 9 qtr/6 sem				May choose up to 6 hours
Other				Computer Tech (3) Health and Physical Education (2) 6- 10 hours chosen from Appendices B,C,D,E
Sub-Total of Hours	24- 25	12 – 16		Courses listed in this column are not guaranteed to transfer

**Courses in Areas III and IV must be from two different disciplines.*

TRANSFER MODULE TOTAL HOURS 36 - 41 semester hours

(Total of Columns A, B, and C)

The Transfer Module contains 36-40 semester hours or 54-60 quarter hours of course credit.

*Appendices are located on pages 46 and 47 of Lakeland's current catalog.

Form Revised 08/17/07

Career Technical Credit Transfer (CT²)
AUTOMOTIVE TECHNOLOGY CAREER TECHNICAL ASSURANCE GUIDE (CTAG)
February 29, 2008 (Revised April 8, 2008)

The following courses are eligible for transfer between career technical education, adult workforce education, and post-secondary education:

Brakes - CTAUT001 Credits: 2 semester/3 quarter hours **Advising notes:**	
Prerequisites: ASE program certification (accreditation) Student passage of the NATEF/AYES end of program assessment or the ASE certification assessment (current w/i 2 years) Career-technical secondary or adult faculty sign-off of student safety and laboratory learning.	
Electrical/Electronic Systems - CTAUT002 Credits: 2 semester/3 quarter hours. **Advising notes:**	
Prerequisites: ASE program certification (accreditation) Student passage of the NATEF/AYES end of program assessment or the ASE certification assessment (current w/i 2 years) Career-technical secondary or adult faculty sign-off of student safety and laboratory learning.	
Engine Performance - CTAUT003 Credits: 2 semester/3 quarter hours. **Advising notes**:	
Prerequisites: ASE program certification (accreditation) Student passage of the NATEF/AYES end of program assessment or the ASE certification assessment (current w/i 2 years) Career-technical secondary or adult faculty sign-off of student safety and laboratory learning.	
Suspension and Steering - CTAUT004 Credits: 2 semester/3 quarter hours. **Advising notes:**	
Prerequisites: ASE program certification (accreditation) Student passage of the NATEF/AYES end of program assessment or the ASE certification assessment (current w/i 2 years) Career-technical secondary or adult faculty sign-off of student safety and laboratory learning.	
Total Guaranteed Credits	8 semester/12 quarter

Institutional Requirements and Credit Conditions:

1. Admission requirements of individual institutions and/or programs are unaffected by the implementation of CT² outcomes.
2. Institutional residency requirements may affect the amount of transfer credit.
3. Candidates for graduation from collegiate or university programs may have to satisfy additional degree requirements associated with basic related or general education studies.
4. The institution must have a comparable program or major certified by NATEF/ASE.
5. The student must provide proof to the receiving institution that she/he holds the appropriate NATEF/AYES end of program certificate or ASE certificate.

Learning Outcomes: The CTAG illustrates the learning outcomes that are equivalent or common in introductory technical courses/programs. In order for career-technical completers to receive the indicated credit, institutions must document that their course/program content matches the learning outcomes in the CTAG.

Recognized industry standards are expectations established by business, industry, state agencies, or professional associations that define training program curricular requirements, establishes certification or licensure criteria, and often serve as the basis for program accreditation. Industry standards and certifications also provide documentation of student learning. The course learning outcomes for automotive technology were drawn from the National Automotive Technicians Education Foundation (NATEF) standards as developed by the automotive industry and are used for certification (program accreditation) by the National Institute for Automotive Service Excellence (ASE).

The NATEF core content areas (brakes, electrical/electronic systems, engine performance, and suspension and steering) were identified to meet the CT² transfer initiative mandated by H.B. 66. Ohio has over ninety (90) ASE accredited programs; Ohio's technical content standards are NATEF aligned; and with few exceptions, most secondary, adult, and higher education automotive technologies programs in Ohio are based on the national standards.

Equivalent Automotive Technology Courses/Programs:

15.0803	**Automotive Engineering Technology/Technician** (higher education)	A program that prepares individuals to apply basic engineering principles and technical skills in support of engineers and other professionals engaged in developing, manufacturing and testing self-propelled ground vehicles and their systems. Includes instruction in vehicular systems technology, design and development testing, prototype and operational testing, inspection and maintenance procedures, instrument calibration, test equipment operation and maintenance, and report preparation.
17.0302	**Auto Technology** (career-technical and adult education)	Learning experiences concerned with service and repair of all the components of the vehicle. The instructor and the program must be ASE certified in Brakes, Engine Performance, Electrical/Electronic Systems, and Suspension and Steering.

Career-Technical Articulation Numbers (CTAN): The Course Equivalency Management System (CEMS) numbering system defines the content of the technical area. Institutions map their course(s)/program(s) to these Career-Technical Articulation Numbers or CTANS.

CTAUT001 – AUTOMOTIVE TECHNOLOGY - BRAKES
2 Semester Hours/3 Quarter Hours

Learning Outcomes: All CT^2 learning outcomes align to NATEF competencies and priority levels. Submitted course equivalency documentation must include ASE program certification (accreditation). Career-technical secondary and adult education programs must document access to NATEF/AYES end of program assessment or the ASE certification assessment (passage current within two years of program completion). Career-technical secondary or adult must document student safety and laboratory learning.

Demonstrate basic knowledge and skills in brakes…

1. **General Brake Systems Diagnosis (4 NATEF competencies)**
2. **Hydraulic System Diagnosis and Repair (13 NATEF competencies)**
3. **Drum Brake Diagnosis and Repair (7 NATEF competencies)**
4. **Disc Brake Diagnosis and Repair (12 NATEF competencies)**
5. **Power Assist Units Diagnosis and Repair (5 NATEF competencies)**
6. **Miscellaneous - Wheel Bearings, Parking Brakes, Electrical (9 NATEF competencies)**
7. **Antilock Brake and Traction Control Systems (9 NATEF competencies)**

NOTE: Refer to current NATEF standards for competencies and applicable priority levels - www.natef.org

CTAUT002 – AUTOMOTIVE TECHNOLOGY – ELECTRICAL/ELECTRONIC SYSTEMS
2 Semester Hours/3 Quarter Hours

Learning Outcomes: All CT^2 learning outcomes align to NATEF competencies and priority levels. Submitted course equivalency documentation must include ASE program certification (accreditation). Career-technical secondary and adult education programs must document access to NATEF/AYES end of program assessment or the ASE certification assessment (passage current within two years of program completion). Career-technical secondary or adult must document student safety and laboratory learning.

Demonstrate basic knowledge and skills in electrical/electronic systems…

1. **General Electrical System Diagnosis (21 NATEF competencies)**
2. **Battery Diagnosis and Service (10 NATEF competencies)**
3. **Starting System Diagnosis and Repair (6 NATEF competencies)**
4. **Charging System Diagnosis and Repair (5 NATEF competencies)**
5. **Lighting Systems Diagnosis and Repair (4 NATEF competencies)**
6. **Gauges, Warning Devices, and Driver Information Systems Diagnosis and Repair (4 NATEF competencies)**
7. **Horn and Wiper/Washer Diagnosis and Repair (3 NATEF competencies)**
8. **Accessories Diagnosis and Repair (11 NATEF competencies)**

NOTE: Refer to current NATEF standards for competencies and applicable priority levels - www.natef.org

CTAUT003 – AUTOMOTIVE TECHNOLOGY – ENGINE PERFORMANCE
2 Semester Hours/3 Quarter Hours

Learning Outcomes: All CT^2 learning outcomes align to NATEF competencies and priority levels. Submitted course equivalency documentation must include ASE program certification (accreditation). Career-technical secondary and adult education programs must document access to NATEF/AYES end of program assessment or the ASE certification assessment (passage current within two years of program completion). Career-technical secondary or adult must document student safety and laboratory learning.

Demonstrate basic knowledge and skills in engine performance…

1. **General Engine Performance (17 NATEF competencies)**
2. **Computerized Engine Controls Diagnosis and Repair (10 NATEF competencies)**
3. **Ignition System Diagnosis and Repair (8 NATEF competencies)**
4. **Fuel, Air Induction, and Exhaust Systems Diagnosis and Repair (11 NATEF competencies)**
5. **Emissions Control Systems Diagnosis and Repair (12 NATEF competencies)**
6. **Engine Related Service (8 NATEF competencies)**

NOTE: Refer to current NATEF standards for competencies and applicable priority levels - www.natef.org

CTAUT004 – AUTOMOTIVE TECHNOLOGY – SUSPENSION AND STEERING
2 Semester Hours/3 Quarter Hours

Learning Outcomes: All CT^2 learning outcomes align to NATEF competencies and priority levels. Submitted course equivalency documentation must include ASE program certification (accreditation). Career-technical secondary and adult education programs must document access to NATEF/AYES end of program assessment or the ASE certification assessment (passage current within two years of program completion). Career-technical secondary or adult must document student safety and laboratory learning.

Demonstrate basic knowledge and skills in engine performance…

1. **General Suspension and Steering Systems Diagnosis (4 NATEF competencies)**
2. **Steering Systems Diagnosis and Repair (21 NATEF competencies)**
3. **Suspension Systems Diagnosis and Repair (18 NATEF competencies)**
4. **Wheel Alignment Diagnosis, Adjustment, and Repair (12 NATEF competencies)**
5. **Wheel and Tire Diagnosis and Repair (13 NATEF competencies)**

NOTE: Refer to current NATEF standards for competencies and applicable priority levels - www.natef.org