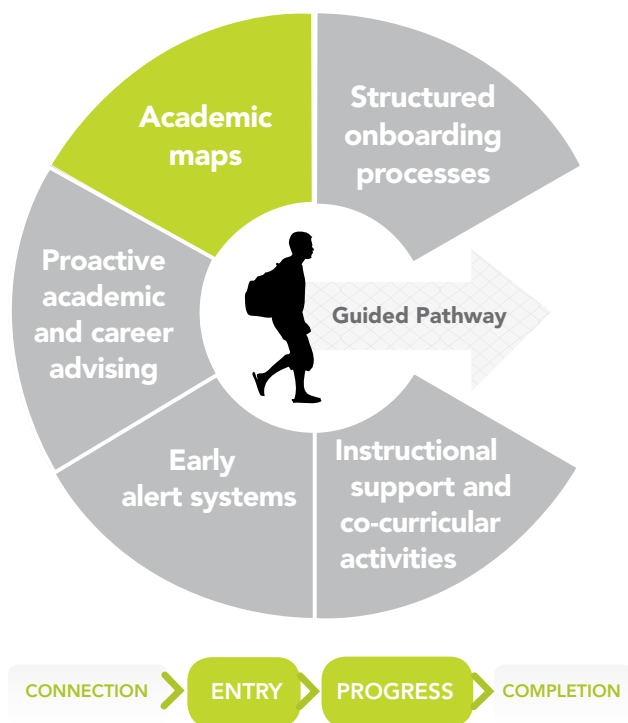


Academic Maps: Getting Students to Credential Completion



Prior to CBD, most colleges had a variety of program sheets for degree and certificate programs. These program sheets typically were more specific and prescriptive for associate in science and technical programs, but looked more like a cafeteria menu for transfer programs. Recognizing that all students could benefit from more specific guidance, the colleges developed and/or expanded their use of academic maps to ensure all program areas had clear paths to credential completion.

Academic Mapping Teams

Colleges built small teams to structure the academic mapping work. These design teams typically included core CBD members, a few faculty, and one or more representatives from academic leadership (e.g., vice-president of instruction, academic dean, department chair). With a structure in place, the colleges then expanded the number of faculty involved in the actual mapping work.

Most colleges focused initially on programs of study with the highest enrollment or ones that were known to have problems (too many credits, too many electives, courses that didn't transfer, etc.) Over time the colleges expanded the academic maps to cover programs that represent the majority of students enrolled. Colleges anticipated pushback from faculty, especially General Education faculty, because of the potential to limit or reduce the number of elective choices. In fact, colleges in North Carolina did reduce the number of electives they offered after an analysis of transferrable courses and subsequent changes in the articulation agreement within the state system.

The larger colleges established faculty steering committees with representatives from the major academic disciplines to guide the work of the disciplines throughout the mapping process. Faculty participating in the steering committees typically were given release time from other duties; discipline faculty who did the actual mapping were not compensated separately.




“Few activities were simultaneously as fun and depressing as compiling the spreadsheet showing which of our general education core courses were being accepted by the 16 state universities as general education credit. ... It was sad to see how little the universities regarded the courses we offered. But we began to better understand the frustrations of our students. In the end, we couldn’t in good conscience recommend students take courses that didn’t transfer to most UNC schools.”

Guilford Tech team member



The Sinclair team said that faculty involvement was important because faculty peers worked with one another “to engage the college from the ground up.”

At Miami Dade, the steering committee tried to complete an academic map for a student in the sciences, using information in the college’s degree audit and the state’s transfer requirements website. After half an hour, they raised their hands in defeat, arguing that it was impossible to complete the task. Realizing that students (and some advisors) also were

struggling to create a logical sequence of courses, they were convinced of the need for simple, easy to understand academic maps. These faculty then became champions of the process.  See Miami Dade’s academic maps: completionbydesign.org/resource/building-guided-pathways-mdc.

Broad faculty engagement helped build understanding and use of academic maps. But it also required significant planning time—ranging from nine months at a smaller college to more than 24 months at larger ones. One college suggests it would have been more expedient if advisors had built draft maps to which faculty could add recommended electives and departmental information. Most others believe faculty involvement clearly outweighed any negatives about timing.

The academic mapping team at Guilford Tech recommended adding seven certificate programs in the Computer Science area after identifying the need for specialization and certificates that would stack toward broader credential achievement. They presented first round recommendations to department chairs and then invited all faculty to a presentation of their findings delivered in person, online in real time, and by recorded video for those unable to participate live. With that feedback, the mapping team made minor adjustments to their recommendations that were then approved by the Curriculum Committee at the college. This led to two additional rounds of program restructuring: a voluntary departmental self-study process in 2013 that restructured 20 programs, and a mandatory process in 2015 to restructure all technical programs.

Some colleges also involved advisors in the mapping process from the start. However, all of them ultimately realized the value of advisors’ practical experience helping students navigate the system and included them in subsequent reviews and re-assessments.



“Many folks felt frustrated with the amount of time it took to have the discussions with general education faculty. In retrospect, though, it may have been the best thing we did. And it contributed to a successful redesign experience.”

Davidson team member



“We considered delaying because we knew the possibility existed that we would do all this work and then the new CCA (articulation agreement with the university system) would change everything. It did, but because we had engaged our faculty by then, it was a little easier for them to accept and make additional changes when the new CCA came.”

Central Piedmont team member



“We learned that a one-size academic map does not fit all. Academic maps have to be adapted to each student’s life situation and reconfigured when a student changes his program of study or fails a course or transitions to part-time status. The advisors do this work. They, with faculty and other staff, can learn from each other about how to implement academic maps and reinforce their use.”

Sinclair team member

Good Data, Consistent Process

Using data to “de-emotionalize” the mapping process was key to success at most colleges.

At one college, the humanities faculty in the fine arts was concerned that enrollment declines in arts courses were due to academic mapping because some disciplines recommended that students enroll in philosophy instead of art or music. But the data showed that enrollment declines were due, to a large extent, to higher enrollment in gateway mathematics and English courses. When this was shared with the fine arts faculty, along with the data that demonstrated higher completion rates for students who completed math and English at the start of college, faculty readjusted their enrollment projections for the near term with an understanding that enrollment levels would increase once math and English requirements had been fulfilled.

All colleges cite the importance of using structured processes and templates to manage the broad faculty engagement and varying levels of knowledge about general education requirements. Resources and tools used successfully by the colleges include:

- Templates to list term by term curriculum requirements and recommendations 📄 See sample templates:
completionbydesign.org/resource/building-guided-pathways-sinclair
completionbydesign.org/resource/building-guided-pathways-mdc
completionbydesign.org/sites/default/files/resources/cbd_toolkit_cpcc_2.pdf
completionbydesign.org/sites/default/files/resources/cbd_toolkit_davidson_1.pdf
- Standard instructions and materials, including examples of completed academic maps. 📄 See sample instructions and materials (same as template links above).
- Clearly communicated graduation and transfer requirements.
- Rationale for strategic placement of key courses, especially in math, English, and first program of study courses.
- Best practice information from their own states and nationally.
- Facilitated cross-discipline discussions and collaboration.
- Regularly scheduled reviews and progress reporting.

Operationalizing Academic Maps

Sinclair developed an annual pathway review process that takes place prior to the release of their annual calendar. After curriculum changes are made by the academic disciplines, advisors and faculty meet to review them and adjust student academic plans, if necessary.

Additionally, external factors in some states have required the colleges to amend, revise, and change some of the academic maps.

In 2014, North Carolina implemented a Comprehensive Articulation Agreement defining 43 general education courses that could be completed at community colleges to satisfy the equivalent requirements of the state university system for students transferring with AA and AS degrees. This required the NC colleges to reassess the list of general education courses included in the first version of their academic maps for compliance with the articulation agreement. Several colleges reduced their course offerings, eliminating those that did not transfer to the UNC system, or did not transfer as a program, general education, or elective requirement.

*Florida had strong articulation agreements in place for many years prior to CBD, but the foreign language and general education requirements were changed statewide in 2014 and 2015, respectively. Like the NC colleges, **Miami Dade** had to update its academic maps to reflect these changes. This work was easier to do and accepted more quickly because of the prior academic mapping work that had been done.*

Professional development for faculty and staff was an important component of successfully developing and implementing academic maps. Mapping team members went to discipline meetings and retreats to share the rationale for academic pathways and help faculty teams start the mapping processes. Ongoing training for advisors is also in place to share the rationale and provide them with the content knowledge and updates they need to implement maps effectively with students.

Students like academic maps because they provide all the information they need about which courses to take and when to take them in one place. One student described the difference:



“They tell you what you need to take, show you what that’s going to look like and help you choose the right courses. Versus just saying, ‘Here are all the options. Whatever you want to take, just take.’”

Student

These academic maps are living documents. They adapt to statewide changes and to shifts at the institutions to which CBD college students transfer. Many transfer institutions have begun to encourage or require students in certain programs of study (like arts and humanities, mass communications, and social sciences) to complete non-algebra track math courses (like statistics, quantitative reasoning, or liberal arts math) that are more contextualized to the competencies students in those programs need to master. Because academic maps guide students’ preparation for transfer institutions so they enter with the skills and competencies equal to students who begin at those institutions, the CBD academic maps were adapted to reflect similar math pathways.

Impact and Intervention

Many of the colleges are now able to both see and measure the impact of academic maps on:

- **Program selection:** More students are correctly placed in associate science vs. associate arts programs based on their career goals.
- **Course taking patterns and pass rates:** Increasing numbers of students are enrolling in and completing key mathematics and

English courses in the first year, and also completing the first meta-major or program of study course.

- **Benchmark achievement (credits earned/credits required):** More students are completing 12 and 24 college level credits in their first year.
- **Retention:** Fall to Fall enrollment is increasing at many colleges.

Academic maps are also a valuable predictive tool for early alerts and intervention strategies. Together with course performance data they highlight where and when students are most at risk of faltering. Interventions include supplemental instruction, referrals to resources that provide financial and/or counseling support, and re-evaluation of academic and career goals.

At Lorain, students repeating a course for the third time are now required to meet with a member of the relevant academic department to create an appropriate intervention, such as a study plan or participation in a preparatory course.

Stark State developed an algorithm that allows them to identify which pre-nursing students are on track—or not—to meet admissions requirements for their nursing programs. They initiate discussions with students who are not on track to explain the likelihood of program admission and identify potential alternate programs of study pathways that may help students to make smart decisions about their academic and career goals.

Guilford Tech students are blocked from repeating a course for the third time and required to meet with a Student Success Specialist to develop appropriate interventions before the registration hold is lifted.

In North Carolina, the statewide degree audit technology allows students to “try out” other majors they may be interested in pursuing. The technology identifies which credits earned to date would apply to a new major as well as additional courses and credits that need to be completed.

DAVIDSON COUNTY COMMUNITY COLLEGE'S EARLY ALERTS AND INTERVENTIONS STRATEGY

A team of faculty and staff at Davidson created a conceptual design for a unified, comprehensive early alert system. The design would combine intake assessments and non-cognitive information about students with real time information about classroom performance. The goal was to leverage what was working already by integrating successful (but often manual) processes within the college with best practice strategy.

Senior leadership invested in software to accomplish this integration. Faculty teams began planning implementation of electronic grade books and mid-term reporting. Another team began working with an external software provider to identify and develop internal processes at the heart of an alert and intervention system.

The alert system is linked to the Learning Management System so assignment and test grades are imported automatically on a daily basis. This gives all members of a student's support network instant access to monitor the student's progress throughout the term. The resulting "alerts" are auto-generated in the system when students meet pre-defined "triggers," identifying those who would benefit from academic and/or student services intervention and support. Faculty also raise flags (alerts) when they have concerns about students in their classes, and this information is communicated immediately to the advisors for those students. Faculty and advisors who receive these alerts have access to actionable information to engage the student in substantive, meaningful discussions about their progress. Faculty can also use the tool to provide positive feedback and encouragement to students who are doing well.

The new system was piloted with a small group of faculty in Fall 2012. It was available for other faculty on a voluntary basis in Spring 2013 and became mandatory for all faculty and advising staff in Fall 2013.

The team at Davidson faced several early implementation challenges:

- Although faculty and staff were involved in determining the triggers for alerts, the system generated so many that there weren't enough human resources to follow up individually with every student. This required additional strategic planning to develop automated processes as a first line of intervention, "making the system work for us, to help students."
- Faculty and staff had to get comfortable that each would use the information appropriately. To build trust, advisors attended faculty meetings and scheduled advising sessions during faculty office hours so they could communicate and collaborate more effectively. Advisors shared their strategies for interventions and developed "crosswalks" to link specific alerts with appropriate non-cognitive interventions.

As a result, the number of student-initiated withdrawals has declined from 11.1 percent in the year prior to pilot implementation to 7.5 percent in 2014–15. Students are making more informed decisions about dropping courses and fewer students are repaying money. Students who received an unsatisfactory mid-term report and were flagged with concerns by faculty within the first eight weeks of the semester were 8 percent more likely than those not flagged to complete their courses successfully. Students tell each other they have been "Starfished" and report in surveys that advisors are more proactively supporting them.

"It was awesome for me." said one student. "It made a positive impact on my academic performance this semester and last semester. When I get a Kudos, it's like getting that pat on the back saying, 'You're doing great, keep it up.' It makes me want to keep doing my best. It's typical for a teacher to let you know when you need to step it up but it's just as helpful, if not more, to be told you're doing a great job. Without encouragement, sometimes the work can be overwhelming, so it's nice to have that encouragement from my teachers."

These improvements in student success were driven by a cultural shift from faculty-focused to student-centered. Davidson has moved from using the technology as an early alert system to a comprehensive student success solution. Next steps include adding student intake assessments and non-cognitive information to the system and expanding its scope to include prospective students.

STARK STATE COLLEGE'S ALTERNATE PATHWAYS STRATEGY

At Stark State, the admissions criteria for the selective nursing program stipulates students earn a cumulative 3.0 GPA in their pre-application courses, and a "B" or higher in specific courses. Historically, students who declared Nursing as their program of study were not making successful progress in the developmental pre-requisites, nor earning "B" grades in the required courses. Students also frequently failed to earn a 3.0 GPA. Even more alarming, a large number of students accumulated excess credit hours without positively effecting their GPA or chances for admission, all the while using up valuable financial aid eligibility. As a result, students "languished in a pre-nursing state" for several semesters with no clear path to completion.

Why was this happening? Because advising was not required after the first semester and students were self-advising through what was, at the time, a complex nursing application process. Without better support from the College, students were making bad decisions based on folklore they heard from other students.

Leveraging tools like a GPA calculator, the academic mapping team used a formula to determine the number of "A" and "B" level course work hours students would need to improve their GPAs to 3.0. For example, if a student had a 2.5 GPA after earning 30 credits she or he would need to earn an "A" in each of the additional 15 credit hours prior to applying to the nursing program. The team segmented pre-nursing students into three groups (green, yellow, red) based on their readiness to apply and likelihood their applications would be successful. The analysis also considered financial aid eligibility to determine if students had enough left to complete the courses required to improve their GPAs.

Faculty and staff designed a comprehensive advising program to support students in taking more active roles in their career decision making. Advisors reached out to students they believed would benefit most from the intervention (those with GPAs from 2.0 to 2.8) and asked to review the nursing program requirements with them.

An advising tool was created to ensure that clear, consistent information was disseminated. It identifies appropriate interventions based on the same green-yellow-red categories and gives advisors quick access to policies, forms, the GPA calculator, and information about alternate pathways so students can explore their options fully.

🔗 See Stark State's Advising Tool: completionbydesign.org/sites/default/files/resources/cbd_toolkit_stark_1.pdf.

These were hard changes. As one advisor described it, "The complexity of each student's situation made many conversations challenging. Students were disappointed and frustrated. Sometimes they had retaken so many classes to meet eligibility requirements that they had too little financial aid eligibility to get a nursing degree. That's a tough conversation."

Stark State rolled out this intrusive advising model to all health students. Students now meet with academic departments before applying to selective admissions programs to ensure admissions requirements are met and students have a full understanding of the program and career options before enrolling.

Despite the planning and setup, in the first year of the new program only about 26 percent of students contacted met with advisors. As a result, the program has been enhanced in three key ways:

- Science faculty are now assigned to students with lower than 3.0 GPAs to engage them in career discussion earlier.
- Group advising sessions have been established to provide students with more guidance on the appropriate courses in which to enroll.
- New pre-health pathways were designed in the Associate of Science degree. Students now participate in three different stages to enable better identification, advisement, and progress monitoring.

Next Steps for Improvement

Three dynamics challenge the long-term sustainability of academic maps: institutional policy, mismatched intent and practices, and course pass rates.

Institutional policy: No college currently prohibits students from enrolling in courses not on their academic map. This occurs for three key reasons:

- Philosophical beliefs that students should take more responsibility for their educational and career choices.
- Technology that prevents enrollment in “off map” courses.
- Scheduling systems that fail to align demand with the supply of courses.

Mismatched intent and practice: Most CBD colleges don’t have technology that enables automatic monitoring to determine if students are enrolling in the courses recommended by the academic plans and their advisors. In some cases this is a timing issue (technology cannot be rolled out until new enterprise resource planning systems are in place). In others, it’s a financial resource issue.

However, even with improved technology, as long as students self-register and can change schedules at the start of every semester, no technology will stop them from enrolling in courses not recommended by their academic maps unless institutional

policies change. Early data at several colleges indicates that more than half the students are not following their academic plans. Some of this may be due to course unavailability (especially at the end of registration season), but data from students also indicate that they still delay taking foundational courses, especially in mathematics, and continue to follow the recommendations of their peers. Even when advisors are able to access information that students are deviating from plan, they often don’t have enough time to try to convince students to change their courses. This may change when technology improves and/or if financial aid regulations focus more on paying only for courses outlined in a student’s program of study.

Course pass rates: Academic maps require modifications when students fail or withdraw from classes. This occurs frequently, not only for academic reasons, but also as the result of life issues (change in work hours, change in family circumstances, etc.). This has been exacerbated in Florida by the changes in state requirements that permit most high school graduates to skip developmental education. Failure and withdrawal rates in gateway mathematics and English courses have increased, affecting progression in both areas, and also in science courses and courses that require reading and writing proficiency. While technologies can automate the modification of academic maps, they do not solve failure rate issues.