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Efficiency and Student Success with Strategic Scheduling

Perhaps never before in the history of higher education have institutions been more mindful of the balance between efficiencies and service, of offering quality experiences and programs to students while balancing smaller budgets, of providing enough courses to enhance graduation rates while trimming faculty lines and of encouraging growing enrollments while keeping an eye on cost. These are times that call for innovation and bolder approaches.

Like our colleagues in institutions across the nation, we at the University of North Carolina at Greensboro (UNCG) are addressing these issues seriously, with a focus on strategic plans and challenging goals. We are more intentionally using technology to gather information from our students, track their behavior, focus on their needs and make informed decisions about services to meet those needs.

The University of North Carolina at Greensboro

UNCG was founded in 1891 and is classified as a Doctoral/Research-Intensive university, with a total enrollment in fall 2008 of 17,407. Of that number 13,453 were undergraduates, 88 percent of which were enrolled full-time. Full-time faculty number 1,054, teaching in the College of Arts and Sciences, an international honors college and seven professional schools that house 100 areas of study and offer seven undergraduate degrees. In fall 1997 UNCG implemented SunGard's Banner Student Information System, and initiated the degree audit system Curriculum Advising and Program Planning in 2001.

In 2008–09, UNCG underwent a formidable and inclusive strategic planning process, envisioning bold and transformational goals to be achieved between 2009 and 2014. These goals parallel those of the UNC Tomorrow plan, developed collaboratively by the 17 institutions in the UNC system, and speak to affording access to a variety of populations of North Carolina citizens, offering services to address student needs and enhance experiences and supplying programs that will enable students to graduate expeditiously, prepared to face their futures.

A Focus on Student Success

For many years UNCG has been focused on the success of students. In 2003 a task force was commissioned that examined literature and research in the areas of student retention and the programming available at that time for retaining students enrolled at UNCG. Of the 22 recommendations made in the task force report, six suggested improving student advising and advising relationships. A UNC system-wide survey of graduating seniors indicated that only 78 percent of UNCG's seniors surveyed in 1998 considered their satisfaction with the "overall advising experience" to be excellent or good. Additionally, 1998 seniors gave the highest rate of satisfaction (75 percent said good or excellent) to "advisor understanding of degree requirements and course sequencing." Results of these alternating-year senior surveys indicate that UNCG's seniors have had declining satisfaction in each of these advising areas since 1998.

Five of the task force recommendations concerned improving the overall enrollment process and course availability. It was recommended that we pinpoint barriers in curriculum, address course sequencing and the appropriate assignment of prerequisites, consider General Education core requirements and the availability of those courses, and ensure that students attending late orientation sessions get full schedules.

In response to the work of the Retention Task Force, many divisions of the university, the faculty and campuswide committees have worked to address these important recommendations. Much work has been done to enhance the advising process, to enable it to be more of a mentoring experience for students than a focus on course selection. A recent UNCG assessment of student satisfaction with advising is currently being analyzed by the various advising centers on campus. Orientation sessions have become customized for a variety of student populations, to address differing needs. More data are being gathered regarding students' intent to attend UNCG, and students who withdraw or do not return are surveyed to find out the reason why, and personal contacts are made to address problem areas and encourage the student to return.

Given declines in satisfaction since 1998 with the understanding of course sequencing coupled with students' frequent laments that they could have graduated on time if appropriate courses had been available, it became evident that the current degree audit system was not robust enough to ensure student or adviser understanding of course sequencing, and that simply rolling a schedule forward from one fall to the next without regard for, or analysis of, course need was not adequate.

Efficient Strategic Scheduling

How can the issues of appropriate course availability, clear understanding of program sequencing, full schedules for all students and efficient use of resources be addressed concurrently? In 2005, as members of the University Registrar's Office, we joined an innovator's group with Ad Astra Information Systems to influence the development of the Platinum Analytics product. This tool uses historical course offering information and enrollment data from the most recent schedule and considers programs students are enrolled in and courses they have taken to predict the likelihood that they will take a particular course in the upcoming semester. This analysis allows the institution to more efficiently offer courses that students need and are likely to take and provides data to departments about more efficient use of faculty resources. UNCG has begun to use this information to evaluate the number of seats and sections in General Education courses. Data are beginning to be shared with departments regarding sections that need to be added, or could be consolidated or eliminated without affecting students' progress toward graduation.

As we moved into new roles in the Office of Academic Systems and Student Achievement at UNCG and further studied the contributions to success of numerous campus programs and services, it became evident that all the support services a campus can provide will not facilitate graduation if students cannot get their courses in an expeditious way. The importance of a strategically planned schedule was confirmed by Noel Levitz's 2007 National Student Satisfaction and Priorities Report in which students from four-year public and four-year private institutions identified "the ability to get the courses I need with few conflicts" as their top challenge. Two-year community college and technical school students noted getting "classes offered at times I'm available" as their number one challenge.

The Rearview Mirror and the Windshield

Even before our relationship with Ad Astra, UNCG tried to use data to inform decisions about the schedule offerings. The university Registrar's Office provided reports of attempts to register for closed courses, and the Office of Student Academic Services did a variety of manual calculations to determine freshman course demand at orientation sessions. We realized that simple reports were not enough, and we knew that analyzing the historical offerings could only take us so far. The data were always limited by our behavior regarding course offerings. Looking in the rearview mirror provided helpful insights, and that is the reason that historical analysis is a part of the Platinum Analytics suite.

Historical Analysis Types

Two types of historical analysis are historical baseline and historical trend. Historical baseline is a student demand assessment that relies on the historical enrollment in each course during the last like term. For example, if analyzing the fall 2010 term, the last like term would be fall 2009. Historical trend is a student demand assessment that relies on the trends of enrollments in each course during the multiple like terms (usually five or more). For example, if analyzing the fall 2010 term, previous like terms would be fall 2009, fall 2008 and so on.

In addition to looking at the past to predict the future, we also wanted to use the data gathered in our degree audit system to forecast student course needs. By looking through the "windshield," we hoped to ensure that we are offering courses that are required by students.

Forecasting Analysis Types

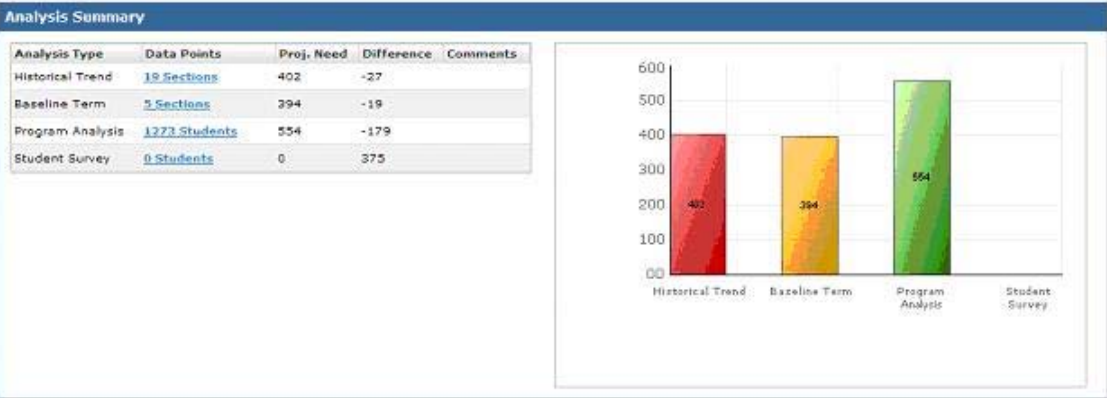
Two types of forecasting analysis tools are program analysis and the student survey. Program analysis is a student demand assessment that predicts the likelihood the student will take a particular class in the term being analyzed. This analysis uses each student's degree program and courses completed to determine courses that will satisfy currently unmet requirements that the student is eligible to take. A student survey is a student demand assessment that relies directly on surveying students on their desired/needed courses for an upcoming academic term. The student survey analysis type is planned functionality that UNCG hopes to take advantage of in spring 2010.

Obviously, each analysis type provides an important piece of the course scheduling puzzle because each has its own individual strengths and weaknesses. Analysis runs are configurable so UNCG can determine how to best weight each analysis type to provide the most comfortable blend in determining demand.

Using the Data

UNCG is in the early stages of rolling out the Platinum Analytics product. For fall 2008 course planning, results from historical analysis were shared with the College of Arts and Sciences for assistance in determining numbers of seats in key general education courses. For fall 2009, results from program analysis were also included. At this point, we are continuing to review courses in which we are not offering enough seats (undersupply). In the following example, UNCG planned to offer 375 seats of MGT 312 in fall 2009.

From the baseline analysis, we see that we were able to enroll 394 students in the last like term. From a historical trend perspective, we have been trending upward and it predicts that we should offer at least 402 seats to meet demand. The most interesting analysis type for this course is program analysis, predicting that we actually need 554 seats. For this course, 1,273 students are eligible to take this course—it completes a requirement for them. We understand that not every student eligible to complete the course will do so, and the analysis rolls up the likelihoods to give a student demand number. UNCG may need to offer at least one more section of this course to ensure that the course is not a bottleneck to graduation.



In addition to ensuring that UNCG is offering enough sections of certain courses, we also reviewed situations in which we might be offering too many sections or too many seats for the demand (oversupply). In the example below (Figure 1), historical analysis indicates that we have never been able to fill the seats offered for PSY 275. For fall 2009, UNCG planned to offer two sections with a total of 300 seats when Astra estimates that 91 seats are needed. This is an example in which UNCG may be able to cut a section of a course without negatively impacting students' graduation requirements.

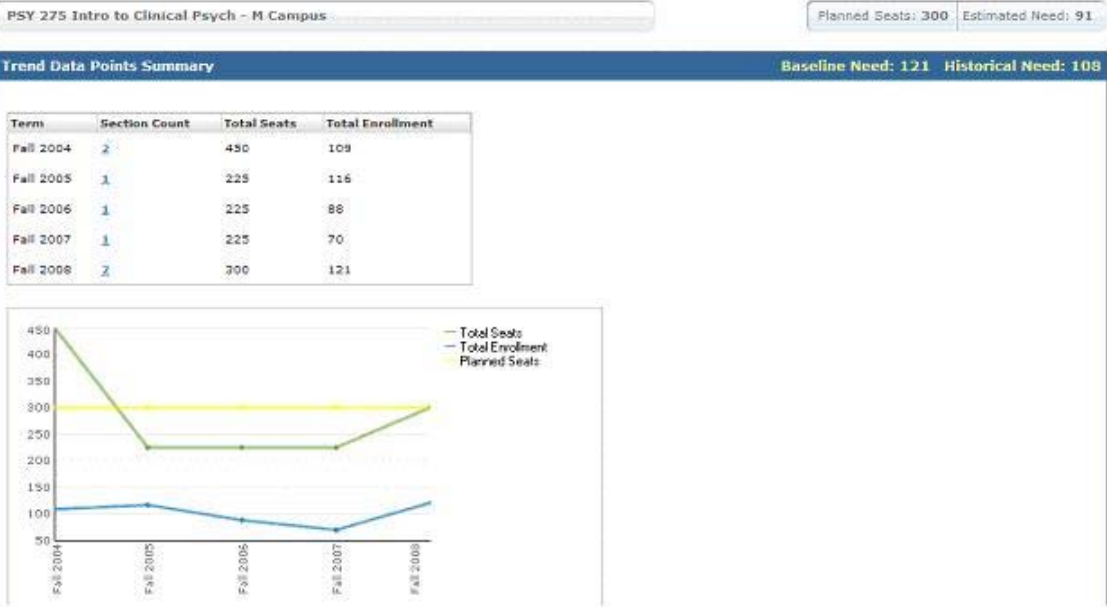


Figure 1. Analysis of a course with past oversupply of course sections/seats, to determine future need.

Conclusions

Enhancing efficiency through improved use of campus resources is the only sustainable way that institutions can continue to meet student needs. Funding for adding new classroom space, salary for faculty and teaching assistants and the cost of instruction overall are areas that are under very close scrutiny in our workplaces today.

In these times of constrained resources, we must better use technology to inform our decisions. For our needs, Ad Astra Platinum Analytics provides an innovative solution to today's economic challenges while enabling us to stay committed to the success of the students in our community.

Ellen Robbins is director of Academic Systems and Student Achievement at the University of North Carolina at Greensboro. She has spent the last 30 years in higher education, working in areas of student development and enrollment services. In her current role, she is involved with evaluation of current systems and programs designed to contribute to student achievement. Ms. Robbins was formerly the university registrar at UNCG and served as a community college registrar for 10 years prior to that. She earned a B.A. in psychology from UNC Chapel Hill and a M.Ed. from UNCG in higher education administration. Her interests in the field of higher education have included student enrollment behavior, involvement and success, and streamlining enrollment processes. She has been a long-

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