



University Students Benefit from Acceleration Courses, But Often Retake Math and Science Courses

at a glance

Acceleration programs provide students the opportunity to take academically rigorous courses and earn college credit while in high school. Our survey of university students found that their participation in these programs helped prepare them for college coursework and gave them a competitive advantage when applying to state universities. Students also reported that generally they were able to use their acceleration credits to meet university degree requirements, and students with these credits typically graduated with 12 fewer excess hours than other students.

However, nearly 24% of students surveyed reported not using some of their eligible acceleration credits because they retook a course at a state university. This practice is most common for math and science courses. Students reported that they retook these courses to improve their understanding of the subject matter, to increase their GPAs, or because their universities recommended that they take these courses as a part of a sequence of courses.

Scope

As directed by the Legislature, this report reviews the extent to which students who earned acceleration credits in high school used these credits after they entered college. This is our fourth report in a series on high school acceleration programs in Florida.¹

Background

Florida has established several programs to enable high school students to take acceleration courses to broaden their curricular options, increase their depth of study in particular subject areas, take rigorous courses that prepare them for the demands of college, and reduce the time it takes to earn a college degree.² Students who pass these courses and exams are eligible to earn college credit that may be used toward degree requirements. Florida offers four categories of high school acceleration programs.

Advanced Placement (AP) classes, offered in 55 Florida school districts and through Florida Virtual School, prepare students to pass national subject matter exams.³ Students

¹ *Student Participation in Acceleration Programs Has Increased; Legislature Has Taken Steps to Reduce Program Costs*, OPPAGA [Report No. 08-70](#), December 2008; *Modifying Advanced Placement Program Incentive Funding Could Produce Significant Cost Savings*, OPPAGA [Report No. 09-12](#), February 2009; *More Than 17% of Acceleration Courses and Exams Do Not Result in College Credit, Which Costs State Almost \$6 Million*, OPPAGA [Report No. 09-21](#), March 2009.

² Section 1007.27(1), *F.S.*

³ Advanced placement courses are offered in 22 subject areas, including calculus, American history, biology, economics, and several languages. Advanced Placement course curricula are developed by the AP Development Committee (by subject field) composed of both university faculty and experienced high school AP teachers.

who earn requisite test scores on AP exams at the end of the year are eligible to receive college credit (students may also take these exams without enrolling in AP courses). In Fiscal Year 2007-08, 129,779 Florida high school students enrolled in AP courses.

Dual enrollment courses allow high school students to simultaneously take and earn credit for high school and college courses without having to pay college tuition. Students must pass the course to earn college credit. Each of Florida's 67 school districts have partnered with colleges and universities to offer these courses. In Fiscal Year 2007-08, 33,323 Florida high school students took dual enrollment courses.

International Baccalaureate (IB) programs are available in 27 school districts. The IB Program is an intensive two-year curriculum that allows students to earn an IB diploma in addition to their high school diploma. Students who take an IB examination at the end of the school year and earn the requisite score are eligible to receive college credit. In Fiscal Year 2007-08, 9,802 Florida high school students enrolled in IB courses.

Advanced International Certificate of Education (AICE) was recognized as a state-funded acceleration program in 2002. Offered in 14 school districts, the program provides advanced courses based on an international curriculum to students in grades 11 and 12. Students who earn the requisite score on end of course exams are eligible to receive college credit. In Fiscal Year 2007-08, 2,171 Florida high school students enrolled in AICE courses.

The State Board of Education and the Board of Governors established the Articulation Coordinating Committee to develop and implement statewide articulation policies and the statewide articulation agreement. The committee identifies the minimum scores students must achieve in order to receive college credit through the AP, IB, and AICE acceleration programs, and the maximum credit hours and the course or courses to be awarded by public postsecondary institutions. Students receive college credit for dual

enrollment courses according to the guidelines of the Statewide Course Numbering System.

The number of high school students enrolled in acceleration programs has increased in recent years, although the percentage of students who qualify for college credit through the programs decreased from 71% in 2002 to 64% in 2007. This likely occurred because some of the increased enrollment represented students who were not as prepared to succeed in the programs.⁴

We recently reviewed the extent to which students transferred their high school acceleration courses and exams to state universities and colleges.⁵ We found that universities and colleges generally awarded students appropriate college credit for acceleration exams and courses consistent with state policy. This report expands on that analysis by examining the benefits of acceleration programs that students report receiving while in college and the extent to which students use acceleration credits to meet degree requirements.

Methodology

To examine how students use acceleration credits once they enroll in college, we surveyed 8,769 students enrolled at the University of Florida, Florida State University, the University of Central Florida, and the University of South Florida.⁶ We chose these institutions because they enrolled approximately 70% of the university students who were eligible to receive acceleration credit in 2005-06.⁷ We received 1,856

⁴ *Student Participation in Acceleration Programs Has Increased; Legislature Has Taken Steps to Reduce Program Costs*, OPPAGA [Report No. 08-70](#), December 2008.

⁵ *More Than 17% of Acceleration Courses and Exams Do Not Result in College Credit, Which Costs State Almost \$6 Million*, OPPAGA [Report No. 09-21](#), March 2009.

⁶ There were 9,410 students who were enrolled in the four state universities for the first time during the 2005-06 academic year who also had earned acceleration credits while in high school. We attempted to contact all of these students by e-mail but were unable to contact 641 students.

⁷ These students accounted for 85% of the acceleration credits earned for students who started at a public post-secondary institution during the 2005-06 academic year.

responses for a response rate of 21%.⁸ In addition, we analyzed the four universities' policies on acceleration credits and interviewed university staff.

To determine if students with acceleration credits graduate with fewer excess hours than other students, we compared the number of college credits attempted for all university graduates with and without high school acceleration credits.⁹

Findings

University students who responded to our survey reported that participating in high school acceleration programs helped prepare them for the demands of college level coursework and made them more competitive during university admissions processes. Most of these students also were satisfied with how they could use their acceleration credits to meet degree requirements in college. In addition, university students who earned acceleration credits graduated with fewer excess credit hours than other students. This saved students tuition expenses, reduced the state's cost to provide instruction, and freed up valuable classroom space at state universities. However, students frequently did not use acceleration credits earned in math and science and retook these courses in college.

Students reported that high school acceleration programs helped prepare them for college

Students who responded to our survey reported two primary benefits from participating in high school acceleration programs.

- Participation in acceleration programs prepared students for college level coursework. Nearly two-thirds of the students reported that the acceleration courses helped prepare them for the demands and rigors of college level coursework. This eased the transition from high school to college.
- Acceleration credits made students more competitive when applying for admission to universities. Over three-quarters (77%) of the students reported that acceleration courses improved their admission standings for college. Universities frequently consider the difficulty of students' high school coursework when making admissions decisions. For example, Florida's universities typically give more weight to acceleration courses than honors and regular high school courses when calculating a student's high school GPA during the admissions process.

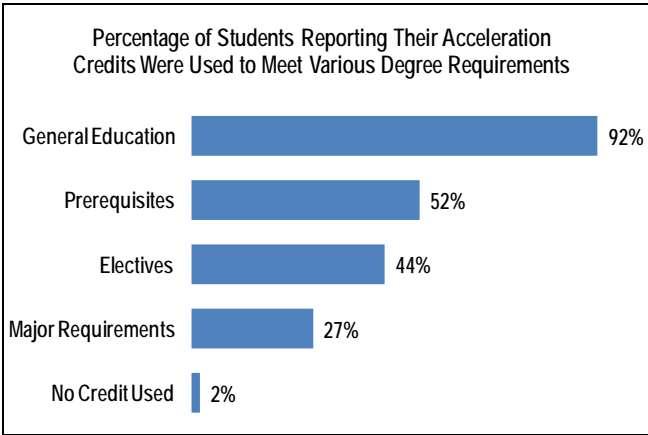
Most university students were satisfied with how they could use acceleration credits in college

Most students (81%) who responded to our survey indicated that they were satisfied with how they were able to use their acceleration credits once enrolled in college. Almost all (98%) said they were able to use acceleration credits to satisfy general education, program or course prerequisites, and/or electives. As shown in Exhibit 1, most (92%) of the students were able to apply acceleration credits towards general education requirements. Students also reported using acceleration credits to meet elective and/or prerequisite course requirements. A few students (2%) reported that they were unable to use any of their acceleration credits or that universities had policies or practices that prevented or discouraged them from using the credits.

⁸ In checking for response bias we found that the University of Florida is slightly overrepresented while the University of Central Florida is slightly underrepresented.

⁹ To conduct the comparison, we analyzed the Board of Governors' data to calculate the number of college credit hours attempted at a post-secondary institution for 2006-07 baccalaureate graduates.

Exhibit 1
Most University Students Reported Using Acceleration Credits to Meet Various Degree Requirements



Note: The percentages add up to more than 100% because students could have selected more than one response. Students may have selected multiple responses if they received multiple acceleration credits and have different responses for each course.

Source: Analysis of OPPAGA Student Survey.

By using their acceleration credits to satisfy lower division degree requirements, students gained flexibility and additional options in choosing coursework for their programs of study. Students reported that this flexibility allowed them to begin major coursework earlier in their university career, to spread difficult courses over multiple semesters, and/or to take additional elective courses and pursue minors, double majors, and dual degrees. A substantial percentage of students (40%) reported that their acceleration credits allowed them to complete college in a shorter time period. (See Exhibit 2.)

Exhibit 2
Students Reported That Acceleration Credits Allowed Them to Enhance Their Postsecondary Educational Experience in Several Ways

	Percentage of Respondents
Provided Additional Flexibility and Options In Planning Coursework	81%
Take Major Coursework Sooner	58%
Spread More Difficult Courses Over Multiple Semesters	33%
Take Additional Electives	39%
Reduce Course Load	49%
Allowed Student to Progress Through College in a Shorter Time Period	40%
Made It Easier to Pursue a Minor, Double Major, or a Dual Degree	37%

Note: The percentages add up to more than 100% because students could have selected more than one response. Students may have selected multiple responses if they received multiple acceleration credits and have different responses for each course.

Source: Analysis of OPPAGA Student Survey.

Students who earn acceleration credits graduated with fewer excess credit hours

In addition to the benefits reported by students, Department of Education data shows that students who earned credits from high school acceleration programs tended to take fewer classes while in college than other students. As shown in Exhibit 3, students who graduated from state universities during the 2006-07 school year typically attempted 128 credit hours of college courses if they had received acceleration credits, while students without acceleration credits attempted 140 credit hours.¹⁰ This difference equates to almost a semester of college courses, which represents a substantial savings in higher education costs to both the state and students. The state benefits from the freed instructional slots and classroom space that allow other students to progress through these classes.

¹⁰ The typical baccalaureate degree requires the student to complete 120 credit hours.

Exhibit 3
University Students With Acceleration Credits Typically Accumulated Fewer Excess Hours Than Students Without Acceleration Credits

State University Students	Median Number of Credit Hours Attempted at State Universities	Median Number of Excess Hours (Beyond Degree Requirements)
Students Without Acceleration Credit (N=31,199)	140	19
Students With Acceleration Credits (N=10,181)	128	7

Source: OPPAGA analysis of Board of Governors' data.

Students often retake math and science courses for which they have received acceleration credits

While students generally were able to use their acceleration credits to meet degree requirements, a substantial percentage reported that they did not use the credits and instead retook courses for which they had previously received acceleration credits. This practice was most common for math and science courses.

Almost a quarter (23.5%) of students who responded to our survey reported that they did not use an eligible acceleration credit because they retook the course at the state university. Most of these students (78%) retook either a math or science course. Math and science courses tend to be sequence courses, where students must master a set of skills and content in order to succeed in the next course in the sequence.¹¹

Decisions to retake courses rather than use acceleration credits are made by students, sometimes at their university's recommendation. More than half (56%) of students who reported retaking a course did so based on their own discretion.¹² The students reported doing so for several reasons, including taking the courses to help boost their college GPA and to better prepare themselves for upper division coursework. For

¹¹ In addition to being sequence courses, some math and science skills may overlap. For example, students need to fully understand calculus to complete organic chemistry or physics.

¹² Since students typically received credit for multiple acceleration courses, they may have different responses for each course.

example, some students took Calculus I in college even though they had earned college credit for this class through a high school acceleration exam. However, students who also are required to take Calculus II to meet their degree requirement may feel that they did not master all of the foundational skills in their high school Calculus I class that they needed to succeed in Calculus II.¹³

Slightly less than half of the students (46%) reported that they retook a course because it was strongly recommended to them by the university or their advisors.¹⁴ For example, the University of Florida has a policy recommending that students in health-related majors retake math and science sequence courses for which they had previously received acceleration credits. In addition, university officials at several universities indicated that their academic advisors typically advise students in math and science majors to retake related acceleration credits involving sequence courses. University officials indicated that these practices ensure that the students master the prerequisite content before moving on to the next course in the university sequence.

Students also reported retaking classes to better meet graduate school admissions requirements. Specifically, 21% of the students who retook a course reported retaking courses to either satisfy or improve their admissions credentials for graduate programs. For example, graduate programs in medicine or health-related fields recommend that students complete the university's math or science course, rather than use their acceleration credit, to be admitted to the program. Graduate programs may also use a student's grades in university courses when calculating a student's GPA for admission purposes and cannot include acceleration exam (AP, IB) credits in that GPA calculation.¹⁵

¹³ A score of 3 on an AP exam is considered passing and therefore equivalent to a grade of C in a college course. If students earned a C in the first college course in the sequence they may not be as confident in their performance in the next course, than students who earned an A or B grade.

¹⁴ The percentages add up to more than 100% because students could have selected more than one response. Students may have received multiple acceleration credits and have different responses for each course.

¹⁵ Some graduate programs may require certain GPA's in prerequisite courses for students to be admitted. This GPA calculation may differ from a student's undergraduate GPA, as dual enrollment or transfer courses are not included in a student's undergraduate GPA.

Recommendations

To address the issue of students retaking math and science university courses for which they received acceleration credits, we recommend that the Department of Education and the Board of Governors take the actions described below.

- The Articulation Coordinating Committee should review the math and science course equivalencies for Advanced Placement and International Baccalaureate exams and validate these equivalencies with all universities, state colleges, and community colleges. In addition, universities that recommend students retake math and science acceleration courses should provide input about whether the exams are equivalent to the college level courses.
- The Articulation Coordinating Committee should establish guidelines for state universities and colleges to follow when students retake courses at state universities and colleges for which they received AP/IB exam credits. These guidelines should help students receive appropriate credit hours and use their acceleration credits to meet overall graduation requirements.
- Add a statement to the Articulation Coordinating Committee's credit-by-exam guidelines indicating that universities, state colleges, or community colleges may recommend that students retake math and science related courses at the university or college if they are required to take a sequence of courses or pursuing a major in that field. The department should also issue a memorandum to high school guidance counselors alerting them to this practice, so that they can inform high school students.

Agency Response

In accordance with the provisions of s. 11.51(5), *Florida Statutes*, a draft of our report was submitted to the Department of Education and to the Board of Governors to review and respond. Both written responses have been reprinted herein in Appendix A.

Appendix A**FLORIDA DEPARTMENT OF EDUCATION**

Dr. Eric J. Smith
Commissioner of Education

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June 16, 2009

Gary R. VanLandingham, Ph.D.
Director
Office of Program Policy Analysis &
Government Accountability (OPPAGA)
Claude Pepper Building, Room 312
111 W. Madison St.
Tallahassee, FL 32399-1475

RE: Report 09-xx *University Students Benefit from Acceleration Credits, but Retake Math and Science Courses*

Dear Dr. VanLandingham:

Thank you for the opportunity to respond to the draft report entitled *University Students Benefit from Acceleration Credits, but Retake Math and Science Courses*. The Department of Education, through the work of the Articulation Coordinating Committee (ACC), has consistently supported policies that ensure students the maximum amount of postsecondary credit for the successful completion of acceleration mechanisms.

Section 1007.27, Florida Statutes, directs the Department of Education to identify minimum scores, maximum credit, and postsecondary course equivalencies for the following accelerated examinations: Advanced Placement (AP), International Baccalaureate (IB), Advanced International Certificate of Education (AICE), and College-Level Examination Program (CLEP) examination. In 2001, the State Board of Education first adopted the *ACC Credit-By-Examination Equivalency List*. This list has been revised and expanded several times, with the next adoption by the Board of Governors and State Board of Education scheduled for June and July of 2009, respectively.

The OPPAGA report indicated that more than half of the students who “retook” a math or science course at the college level, rather than using credit earned through Advanced Placement or International Baccalaureate examination scores, did so by choice. Reasons given included a desire to boost the college GPA or a perceived need to enroll in the college course to better prepare for the next course in the sequence. Given that Advanced Placement and International Baccalaureate credit is earned via passing an examination that may be taken substantially earlier than the next course in the sequence, it is logical that students may wish to take a “refresher course” in order to be better prepared for the subsequent course.


Dr. Gary VanLandingham
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Staff from the Office of Articulation worked closely with OPPAGA staff to craft the recommendations in the report regarding potential options to maximize the application of acceleration credit. The Department supports the recommendation to provide, at a minimum, elective credit for students who choose to “retake” a course for which they earned accelerated credit. This approach is consistent with existing policy – the equivalency list currently states that “Institutions must use the course number listed, *unless it would be advantageous for the student to award a specific number with equal credit that satisfies program prerequisites or other requirements.*” Therefore, the Department supports the recommendation to charge the Articulation Coordinating Committee with a review of math and science course equivalencies and crafting a similar statement to address the issue of math and science “retakes.”

It is important to note that there is a difference between students *being advised to or choosing* to enroll in a postsecondary course for which they earned accelerated credit and being *required* to do so. Students should be afforded the opportunity to make an informed decision regarding “retakes.” In addition, this option should be available only to students who earned accelerated credit via credit-by-examination (i.e., AP, IB, CLEP, or AICE). Students who successfully earned postsecondary credit via dual enrollment should not be allowed (or required) to retake a course. State Board of Education Rule (6A-14.0301, F.A.C. – Withdrawal and Forgiveness) limits course forgiveness to courses in which D or F grades were earned.

Should you have any further questions for the Department regarding the Advanced Placement Program in Florida, please contact Dr. Heather Sherry at Heather.Sherry@fldoe.org. Thank you again for the opportunity to respond to this report.

Sincerely,



Dr. Eric J. Smith

ES/hs

c: Dr. Frances Haithcock, Chancellor of Public Schools
 Dr. Willis Holcombe, Chancellor, Division of Community Colleges



FLORIDA BOARD OF GOVERNORS

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June 22, 2009

Gary R. VanLandingham, Ph.D., Director
Office of Program Policy Analysis
And Government Accountability (OPPAGA)
Claude Pepper Building, Room 312
111 West Madison Street
Tallahassee, Florida 32399

Dear Dr. VanLandingham:

Thank you for the opportunity to review the draft report titled *“University Students Benefit from Acceleration Courses, but Retake Math and Sciences Courses.”* The Board of Governors (BOG) is supportive of articulation efforts that assist students in meeting their educational goals and will continue the cross-sector work to appropriately meet those needs.

We support the OPPAGA recommendation that the Articulation Coordinating Committee (ACC) review the math and science course equivalencies for Advanced Placement (AP) and International Baccalaureate (IB) examinations and validate them with all universities. It is hoped that this review will be conducted in conjunction with the ACC project which focuses on determining expected student learning outcomes for specified Statewide Course Numbering System coursework. Reviewing both the examination equivalencies and expected student learning outcomes for courses at the same time will increase the probability that the examinations are matched and reflect the proper courses. If the two can be matched, faculty can have more assurance that students who pass the exams can demonstrate the expected learning outcomes for the related courses.

We support the OPPAGA recommendation for the establishment of guidelines for universities and colleges to follow, as long as the guidelines are thoroughly vetted through the ACC process before adoption.

We agree that students should be informed that they may be encouraged to retake certain math- and science-related courses if they are required to take a particular

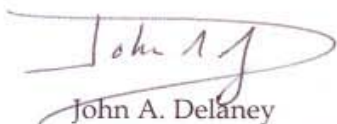
Gary R. VanLandingham
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sequence of courses or are pursuing a major in that field. Adding a statement concerning this issue to the ACC's Credit-by-Exam Guidelines, along with a memorandum to high school guidance counselors, would be a proactive step in communicating this information.

Finally, the Board of Governors recognizes the important role that clear articulation standards have in providing smooth access to students, both from high school directly into a university and from a Florida College System institution into a university. The Board will continue to work with the Articulation Coordinating Committee, its partners, and university faculty and staff to provide the best mechanisms to promote student success.

Thank you once again for the opportunity to review and respond to this report.

Sincerely,



John A. Delaney
President in Residence

JAD/smm

The Florida Legislature
Office of Program Policy Analysis
and Government Accountability



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