



Decennial Core Curriculum Review Committee

Report of the Advanced Placement Focus Group

May 4, 2015

I. Executive Summary

The Advanced Placement Focus Group of the Core Curriculum Review Committee (“focus group”) had the following charge to be carried out in the 2014-2015 academic year: “The Advanced Placement (AP) Focus Group will examine the use of AP credit at Notre Dame and at peer institutions, and will consider whether and to what extent Notre Dame should accept credit in the Core Curriculum.”

Section II of our report describes the use of AP credit at Notre Dame and at peer institutions. We summarize the current AP policy at Notre Dame, and provide evidence on how students with AP credit fare in subsequent coursework and how they use the added flexibility that AP credit provides. We then document wide variation in AP policy at peer institutions.

In Section III, we begin by identifying three guiding principles. First, the goal of any AP credit policy should be to enhance student learning. Second, AP credit for a course should be awarded only if the material on the AP exam is aligned with the learning goals for the course. Third, AP credit policy should attend to practical considerations regarding the number of Core and major requirements and the need for flexibility in the curriculum.

We conclude by making the following recommendations to the Core Curriculum Review Committee:

- The Committee should adopt our principle of attending to practical considerations regarding the number of Core and major requirements and to the need for flexibility in the curriculum as it considers AP policy.
- If AP credit continues to be accepted for the Writing and Rhetoric requirement, the University should (1) eliminate credit for the English Literature exam, and (2) consider raising the requirement for credit to a 5 on the English Language and Composition exam.
- A university-level process should be created to establish consistent AP policy across disciplines, with the objective of enhancing student learning. The process should allow stakeholders in AP credit decisions to have a voice, and should ensure that relevant groups are informed of changes with enough time to implement them effectively.

The focus group met in plenary sessions several times over the course of the fall 2014 and spring 2015: December 18, 2014; January 26; February 24; March 3, 24, 31; April 21, 28; May 12, 2015. Many focus group members participated in additional meetings, including meetings with the Enrollment Division Student Advisory Group, the First Year of Studies Advisors, and the leadership of the University Writing Program.

Members included: Chair Kasey Buckles, Economics (CCRC member); David Bailey, Associate Vice President, Strategic Planning, Office of Strategic Planning and Institutional Research (ex-officio CCRC member); Don Bishop, Associate Vice President, Undergraduate Enrollment, Enrollment Division (ex-officio); JoAnn DellaNeve, Arts and Letters Associate Dean for Undergraduate Studies; Leo McWilliams, Engineering (CCRC member); Annette Pilkington, Math; Joseph Stanfiel, Assistant Dean, College of Arts and Letters.

II. The Use of AP Credit at Notre Dame and at Peer Institutions

A. AP Credit at Notre Dame

1. Summary of Current Policy

A detailed description of the University of Notre Dame's policy regarding credit and placement by examination can be found in the University Bulletin; we summarize key features of the policy here. Notre Dame students may earn credit by examination in four ways: (1) through the Advanced Placement (AP) Program administered by the College Entrance Examination Board, (2) through the SAT II-Subject Tests in French, German, Italian, and Spanish, (3) through the International Baccalaureate North America, and (4) through the Notre Dame Mathematics Credit Examination Program. In this report, we will focus on the use of AP credit to satisfy requirements, but most findings and recommendations also apply to other sources of credit. We discuss issues specific to other sources of credit in Section III.

Table 1 describes the current requirements for obtaining credit via AP examination. Note that AP credit may be used to satisfy University Core Curriculum requirements in Science (Biology, Chemistry, or Physics), Mathematics (Calculus or Statistics), Social Science (Economics, Government, or Psychology), and Writing and Rhetoric (English). It may not be used to satisfy requirements in History, Theology, Philosophy, Fine Arts or Literature, or the University Seminar. For Mathematics and Social Science courses, a score of 5 is required for credit, while a score of 4 is accepted for credit in Science and Writing and Rhetoric courses.

The First Year of Studies processes all credit and placement that students may receive by examination, as well as any transfer credit that students might receive for college-level work completed at other institutions. Approved credit is awarded by the Dean of the First Year of Studies and is entered on the official transcript maintained in the Registrar's Office. The University's academic code limits the total number of external credits that can be applied to a student's degree to 30.

2. Data on Use of AP Credit at Notre Dame

In recent years, more than three-fourths of entering Notre Dame students have reported AP scores to the University. For the graduating class of 2013, the average number of credit hours awarded via AP exam was 11.0, and the median was 9.¹ Figure 1 shows the distribution of AP credit for the cohort.

Figure 2a identifies the source of credit for the Core Curriculum requirements, for the graduating Class of 2013.² Note that for this cohort, AP credit was accepted for History, and a score of 4 was accepted for Calculus credit. Figure 2b shows the source of credit for Core requirements by student college.

Our focus group identified two important facts in these data. First, nearly 50 percent of Notre Dame students are using AP credit to satisfy the Writing and Rhetoric requirement. We

¹ College Board, "AP Research at University of Notre Dame," Spring 2014.

² OSPIR report for Core Curriculum Review Committee, Fall 2014.

therefore pay particular attention to this requirement in Section III. Second, students tend to use AP credit to satisfy requirements outside of their discipline. For example, Science and Engineering students use AP credit to satisfy the Social Science requirement; Business and Arts and Letters students use the credit to satisfy Math and Science requirements.

3. AP Credit and the Notre Dame Student Experience

Our focus group investigated how the current AP policy affects Notre Dame students by asking two questions. *First, how do students with AP credit fare in subsequent coursework at Notre Dame?* This question is important, given that a widespread concern about the use of AP credit is that AP courses do not adequately prepare students for college-level work. For example, Association of American Colleges and Universities President Carol Geary Schneider noted that colleges are asking “questions about whether the courses students took in high school, that might’ve been labeled AP or dual enrollment, were really providing students the preparation in writing and research that college itself will emphasize.”³

For evidence on this question, we considered cases where students were able to satisfy a prerequisite for a higher-level course by using AP credit. We then compared the performance in the higher-level course for those students who took the prerequisite at Notre Dame to those who used AP credit. There are two caveats to this approach. First, students who were able to earn AP credit in high school may be better students (we provide some evidence that this is the case below). Thus, if we observe higher average grades for them in the higher-level course, it does not mean that the AP course was better preparation than the comparable ND course. Nevertheless, we would be concerned if we found evidence that students with AP credit were performing *worse* in subsequent courses. Second, the data below show the distribution of grades for students by source of credit, but we do not observe students who drop the course. We are therefore unable to rule out that a lower-tail of students with AP credit dropped the subsequent courses due to a lack of preparation.

The data for this analysis come from a report prepared for our focus group by the Office of Strategic Planning and Institutional Research (OSPIR). Data are from courses offered between Summer 2011 and Spring 2014. We first identified two Math courses and one Chemistry course that have a prerequisite that can be satisfied with AP credit. In Figures 3A-3C, we show the distribution of grades for these three courses, by source of credit for the prerequisite.

In all three cases, students who used AP credit to satisfy the prerequisite did as well or better in the course on average than students who took the prerequisite course at Notre Dame. First, consider the two Math courses. For both MA 10560 (Calculus II) and MA 20550 (Calculus III), students with AP credit were more likely to earn a grade of A, A-, or B+. In Calculus II, the average course grade for students with AP credit was 3.17, compared to 2.95 for those without it. In Calculus III, the average grade was 3.31 and 3.23 with and without AP credit, respectively. For Calculus II, the difference in means is statistically significant at the 5 percent level.

³ Sabri Ben-Achour, “More colleges stop giving credit for AP exams,” *Marketplace*, February 20, 2013.

Next, we consider CHEM 10122 (General Chemistry). The prerequisite for this course is either CHEM 10171 or CHEM 10181. Students who used AP credit to satisfy these prerequisites were much more likely to earn an A or an A- in the course. The average course grade for the two groups of students was 3.37 and 3.08, and the difference in means is statistically significant at the 5 percent level. In all three courses in Figure 3, very few students with AP credit received a grade of D or F.⁴

The OSPIR also provided data on student performance in University Seminars, based on whether the student satisfied the Writing and Rhetoric (WR) requirement by taking WR13100 at Notre Dame, or by earning either a 4 or a 5 on one of the AP English exams. While WR 13100 is not a prerequisite for the University Seminar (USEM), the seminar is intended to be writing-intensive. If we saw that students with AP credit for WR performed systematically worse in the University Seminars, we might worry that they were inadequately prepared to write at the college level. We use data from the spring semester, since students without AP credit would likely have had WR 13100 in the fall (though some may be taking the two courses simultaneously). We compare students based on their scores on either AP English exam; some students had scores for both.

The results of this analysis show that students with AP credit in either English exam are more likely to earn an A or an A- in a spring USEM course than those who took WR 13100 in the fall. Furthermore, there is little variation in performance by type of AP exam. In supplemental data (see Appendix), we see that students who earned a 4 on either English exam performed better on average in USEM courses than those with no AP English credit, but worse than those who earned a 5 on the exam.

The OSPIR data consistently show that students with AP credit outperform those without it on average, and that among those with AP credit, higher scores are correlated with better course performance. As we mentioned above, we would expect this if students with more AP credit or better scores are *ex ante* better students. Evidence of this comes from the College Board's 2014 study entitled "AP Research at University of Notre Dame." The report finds that STEM students with AP credits in *any* subject had higher average first year GPAs than STEM students with no AP credits (3.392 vs. 3.073). We therefore interpret the above results with caution. Nevertheless, we conclude that the data provide no evidence that students with AP credit are faring poorly in their subsequent coursework at Notre Dame.

Our second question was: *How do students use the additional flexibility in their schedules that AP credit provides?* Here, the concern is that students are substituting high school-based courses for college courses, where good college courses place greater emphasis on critical thinking, contextual analysis, and the integration of knowledge across disciplines. When Dartmouth College elected to stop accepting AP credit for its courses in 2013, the chair of its Committee on

⁴ We also observed data for CHEM 10172, Organic Structure and Reactivity. The prerequisite for this course is either CHEM 10171 or CHEM 10181, and students can satisfy CHEM 10171 with AP credit. However, over our three-year sample period, only 47 students entered CHEM 10172 with only AP credit. There were 129 students who scored a 5 on the AP Chemistry exam but still took one of the prerequisite courses (many of whom were likely on a pre-med track). Therefore, we concluded that this course was not well-suited to this analysis. Data from this course are included in the Appendix.

Instruction said, “The concern that we have is that increasingly, AP has been seen as equivalent to a college-level course, and it really isn't, in our opinion.”⁵ Denise Pope, of the Stanford Graduate School of Education, warns that with AP classes, “you can run the risk of memorizing material for a test versus delving into a subject and exploring it in an enriching way.”⁶

Evidence on whether students are using AP credit to take fewer college courses comes from two surveys conducted by the University of Notre Dame’s OSPIR in 2015—one of current students, and one of recent alumni. The surveys included the following question, for students or alumni who indicated that they entered the university with some AP credit: “What effect(s) did your AP/IB credits have on your overall course of studies?”⁷ The results are presented in Table 2.

The survey results indicate that most students are using AP credit to add *breadth* to their college experience—72% of students (78% of alumni) used the time to take more electives, and 59% (52%) used the time to pursue another major or minor. Additionally, 46% of students and alumni used the AP credit to add *depth* in their major by taking more than the minimum number of required courses. Students also report being able to begin their coursework at a more advanced level. This data from the students is supported by our communications with academic advisors, who report that students use the added flexibility to add supplementary majors or minors, explore electives (including languages), or to study abroad.

Notably, only 5% of students and alumni indicate that they used AP credit to graduate early. This is consistent with research from the College Board, which suggests that only 2% of Notre Dame students graduate ahead of time, and some of those remain at Notre Dame and enroll in graduate level courses.⁸ The survey results do suggest that some students may be using AP credit to take fewer credit hours in some semesters—42% of students and 33% of alumni responded that AP credit allows them to feel less stress about completing 15 credits each semester.

B. Use of AP Credit at Peer Institutions

Our focus group reviewed the AP policies of the following peer institutions: Brown University, Columbia University, Cornell University, Dartmouth College, Duke University, Emory University, Georgetown University, Northwestern University, Princeton University, University of Chicago, University of Pennsylvania, and Vanderbilt University. Detailed descriptions of these policies are available in the Appendix; we summarize our findings here.

1. Seven of the twelve schools allow AP credit to be applied to required courses: Cornell, Emory, Georgetown, Northwestern, Penn, the University of Chicago, and Vanderbilt.

⁵ Holly Ramer, “Dartmouth College Ending Advanced Placement Credit,” *Yahoo News*, January 17, 2013.

⁶ Brooke Donald, “Are AP courses worth the effort? An interview with Stanford education expert Denise Pope,” *Stanford Report*, April 22, 2013.

⁷ For the student survey, only juniors and seniors were asked this question; for the alumni survey, only graduates of the classes of 2012 and 2008 were asked.

⁸ College Board, “AP Research at University of Notre Dame,” Spring 2014.

2. Five schools do not allow AP to be applied to required courses: Brown, Columbia, Dartmouth, Duke, and Princeton.
3. Among the schools that do not allow AP credit to be applied to required courses, Brown and Dartmouth use AP for placement purposes and do not provide credit.
4. All but one of the peer institutions (Chicago) have a writing requirement—either dedicated courses or courses with writing attributes. Only one peer institution (Georgetown) allowed students to test out of the entire requirement.
5. It was difficult to find published rationales for the way institutions use AP credit. Institutions for the most part did not publicize what they know or assume about AP credit to make their AP policies.

We therefore conclude that there is no widely-used standard when it comes to AP policy. Related, our representative from the Admissions Office felt that any decision regarding AP policy would not substantially affect Notre Dame’s ability to compete for talented students. This is consistent with the results of the 2015 student survey from the OSPIR, in which only 16 percent of students said that Notre Dame’s policy on granting AP credit was very important to their decision to attend.

III. Should Notre Dame Accept Credit in the Core Curriculum?

Our focus group’s charge asked us to consider “whether and to what extent Notre Dame should accept credit in the Core Curriculum.” We began by identifying three guiding principles:

1. The goal of any AP credit policy should be to enhance student learning.
2. AP credit for a course should be awarded only if the material on the AP exam is aligned with the learning goals for the course (or in the case of a Core requirement, with the rationale for that requirement).
3. AP credit policy should attend to practical considerations regarding the number of Core and major requirements and the need for flexibility in the curriculum.

The latter principle presented a challenge for our focus group. It is difficult to think about how a change in AP policy would affect students’ ability to complete their degrees on time or pursue other academic aims, when the Core Curriculum itself is under review. As such, our report aims to summarize our findings and provide guidance to the Core Curriculum Review Committee, who will in turn make recommendations regarding AP policy as part of its own report.

A. AP Credit and the Number of Required Courses

In order to earn their degrees, students at Notre Dame must satisfy the University’s Core Curriculum requirements (currently 38 credit hours) and the requirements of their major and

college. Among the University's four-year programs, there is wide variation in the total number of credits required to complete a degree. For example, students in Physics-in-Medicine or Biochemistry will have a total of around 100 required credit hours; Anthropology or Art History majors may need as few as 80. Due in part (but not entirely) to accreditation concerns, Engineering majors take 112 non-free credit hours to satisfy University, college, and major requirements.

AP credit allows students to reduce the number of required courses taken at Notre Dame. The survey results summarized in Section II.A. are consistent with anecdotal evidence from our meetings with students and advisors. In summary, we find clear evidence that the majority of Notre Dame students currently use the flexibility afforded by AP credit to substitute elective courses for Core requirements, and not to substantially reduce the total number of college courses they take.

Our focus group therefore recommends that the Core Curriculum Review Committee adopt our principle of attending to practical considerations regarding the number of Core and major requirements and to the need for flexibility in the curriculum as it considers AP policy. We conclude that *if the Core remains at or near its current size*, a policy that eliminated AP credit would significantly constrain many of our students.⁹ However, if the revised Core is smaller or is structured in a way that allows more double-counting, a less generous AP policy might be reasonable.

B. AP Credit and the Writing and Rhetoric Requirement

The focus group paid particular attention to the use of AP credit to satisfy the University Writing and Rhetoric (WR) requirement. For recent entering cohorts, more than half of the students have used AP credit to satisfy this requirement—more than double the rate of any other Core requirement. This requirement is also unique in that it exists outside of any academic discipline, so issues of governance relating to AP credit policy are less clear.

Currently at Notre Dame, students receive credit for the WR requirement if they receive a 4 or 5 on either the English Language and Composition exam or the English Literature and Composition exam. Both exams consist of a multiple-choice section and an essay or free-response section, with a 45% weight on the multiple choice section. The Language exam is designed to test (among other things) students' ability to "analyze and interpret samples of good writing, identifying and explaining an author's use of rhetorical strategies and techniques" and to "apply effective strategies and techniques in their own writing."¹⁰ With the Literature exam, the multiple choice section is designed to "test the student's critical reading of selected passages,"

⁹ Among the five peer institutions that do not accept AP credit in their Cores, three have different Cores for engineering students (Columbia, Duke, and Princeton), and Brown has only one Core requirement.

¹⁰ College Board AP, "English: English Language and Composition, English Literature and Composition, Course Description," 2010.

while the free response section measures “the student’s ability to read and interpret literature and to use other forms of discourse effectively.”¹¹

In a 2013 external review of the University Writing Program (UWP), the reviewers identified the use of AP English to satisfy the WR requirement as “outmoded and in urgent need of reconsideration.” They argued that the exams are “not an appropriate means of placement into a writing course because the way students are taught to write on the AP exam does not reflect the kind of advanced argument taught in the best universities.” Our meeting with students from the Admissions Student Advisory Group was consistent with this assessment—the students prepared for the exam by practicing formulaic responses to writing prompts. The UWP’s external reviewers also noted that, “so far as we know, none of Notre Dame’s aspirational peers use the AP exam for such a purpose.” Among the peer institutions we studied, only Georgetown University allows students to satisfy its entire writing requirement with AP English credit.¹²

We found the argument that the AP English exams are not appropriate for placement into or out of a writing requirement to be most compelling for the AP Literature exam. The exam requires that the student read a passage of poetry or prose, and then answer questions related to the author’s message and techniques. An example of a free-response question from the College Board’s guide to the AP English Literature exam asks students to analyze diction, imagery, and syntax in a soliloquy from Shakespeare’s *Henry IV, Part II*. A sample multiple choice question asks students whether a poem is an example of blank verse, heroic couplet, etc. Contrast this with the rationale for the Writing and Rhetoric requirement in the Core, which states that students in the course “typically analyze and use nonfiction prose as sources of their arguments” and “learn to weigh different and conflicting points of view in formulating their own positions.”

Given our guiding principle that AP credit for a course should be awarded only if the material on the exam is aligned with the learning goals for the course, our focus group recommends that the University no longer allow students to satisfy the WR requirement by submitting scores on the AP English Literature exam. We make this recommendation despite the fact that the OSPiR data discussed in Section II show no difference in USEM performance by type of AP English exam. It may be that the skills required to earn credit on the Literature exam are correlated with those required to do well in a USEM course, but the content of the exam is not aligned with the content of the WR course.¹³ Based on data provided by the First Year of Studies program, we estimate that if the University were to adopt this recommendation, the UWP would need to offer an

¹¹ College Board AP, “English Literature and Composition,” 2014.

¹² Emory and Cornell have multi-course writing requirements, so while they grant AP English credit for some writing courses, it is not possible to fulfill the entire writing requirement with AP credit.

¹³ As a cautionary tale regarding the use of course performance to assess whether an exam should be accepted for credit for a prerequisite course, we also asked the OSPiR to document performance in USEM courses for students with and without AP Calculus scores. Despite the fact that Calculus is not used in most USEM courses, high AP Calculus exam scores were correlated with better performance. In fact, an AP Calculus score of 4 was a better predictor of success in USEM courses than was an AP score of 4 on either English exam. Despite this, we do not suggest that AP Calculus scores should be accepted in lieu of WR 13100.

additional 18 sections of WR 13100 per year. This would require an additional three full-time instructors, or some combination of instructors, graduate students, and adjunct faculty.

Furthermore, for most other Core subjects where AP credit is awarded at Notre Dame, a score of 5 is required. (The exception is science, where a score of 4 earns credit for a lower-numbered course). Mathematics raised the score required for earning Calculus credit from a 4 to a 5 in 2012, citing concerns about inadequate preparation for students earning a 4. While the OSPIR data show that students with a 4 on an AP English exam perform better in USEM courses on average than those with no AP English credit, we believe it is worth considering whether the policy for WR should be brought closer in line with that for the other courses. Aside from a desire for consistency, we note a subtle issue that was raised by the external reviewers—that “by allowing so many students to place out of WR, the current system inaccurately suggests that the focus of the course is remedial, simply skills and drills.”

We therefore also recommend that the University *consider* raising the requirement for WR credit to a 5 (and again, only on the English Language and Composition exam). The First Year of Studies estimates that if the University were to accept only a 5 on the Language exam for WR credit, the UWP would need to offer an additional 41 sections of WR each year, relative to current levels. This would require an additional seven full-time instructors.¹⁴

Our above recommendations regarding the writing requirement pertain to the current Core, in which the writing requirement is satisfied with only one course (USEM courses have a writing component, but there is some variation in the amount of writing instruction students receive). If the revised Core Curriculum has a more extensive writing requirement, it would be more reasonable to allow students to test out of part, but not all, of the requirement. Similarly, our calculations of the impact of the proposed changes on staffing levels assume no change to the structure or delivery of the WR course. Other models of incorporating writing in the Core Curriculum might rely more heavily on tenured and tenure-track faculty (for example).

C. Procedural Issues Regarding AP Policy

In studying the use of AP credit at Notre Dame and at peer institutions, our focus group identified a need for more consistent and clear procedures for determining AP policy. The Department of History’s recent decision to no longer accept AP credit provides a useful case study. Procedurally, the policy was changed by a vote of the department’s Committee on Appointments and Promotions, followed by a vote of the full History Department. The Dean of the College of Arts and Letters was notified of the change, and the policy was enacted.

While our focus group agrees that faculty in the Department of History are most qualified to assess whether the material covered by the AP History exams is adequately aligned with the learning goals for the course, there are other stakeholders. In our meeting with advisors from the First Year of Studies, we heard that many incoming students were frustrated to learn that their AP History credit would no longer count toward their Notre Dame degree, despite what they had been told during the admissions process. The advisors would like to have seen the policy

¹⁴ If no AP credit at all were accepted for the WR requirement, 72 sections would need to be added to current levels.

enacted for the subsequent incoming class. More substantively, because History is one of the University's Core requirements, students in all colleges were affected by this change. Historically, about 25% of Engineering students satisfied the History requirement with AP credit; those students must now take History in lieu of one of the few electives allowed by their major.

Certainly those Engineering students will be able to absorb the additional History class in their schedules, as the 75% of Engineering students who do not earn a score of a 5 on an AP History exam have always done. But under current policy, nothing is to stop the departments of Political Science, Psychology, or Chemistry from following suit.

The result of the *ad hoc* way in which AP policy is currently set at the University is that there is little attention paid to the combined effects of these decisions on our students. If the Core Curriculum Review Committee recommends that AP Credit continue to be accepted, our focus group advises that a process be created at the University level that aims to establish consistent policy across disciplines, with an emphasis on student learning. For example, a decision to no longer accept credit would need to be supported by evidence of a mismatch between test and course, or a systematic lack of student preparedness for subsequent classes. The process should allow stakeholders in AP credit decisions to have a voice in these decisions, and should ensure that relevant groups are informed of changes with enough time to implement them effectively. This is especially important for courses in the Core, where AP policy decisions affect students in all colleges.¹⁵

A final note on process: We were unable to determine how decisions regarding AP credit for the Writing and Rhetoric requirement were made in the past (going back at least forty years), or who might be able to approve future changes.

D. Other Sources of Credit

For simplicity, our report has focused on the use of AP credit to satisfy academic requirements. AP credit is by far the most common source of credit earned outside of the University of Notre Dame, but students may also complete International Baccalaureate (IB) exams or earn credit at other colleges and institutions. (SAT II scores are used to place students into French, German, Italian, and Spanish classes.)

Our findings and recommendations above are generally applicable for other sources of exam credit. For example, any reconsideration of the WR policy of accepting AP English credit would also need to include an examination of the policy of accepting an IB exam score of 6 for that requirement. We recommend that if the University is to continue accepting AP credit, that the University explore the option of also accepting credit for various international exams. Peer institutions including Princeton University, Georgetown University, and the University of Chicago have found systematic ways to recognize performance on British A-level exams.

¹⁵ We leave the details of this process for further discussion, but offer two possibilities. One would be to assign this responsibility to an existing committee (such as the Undergraduate Studies Committee of Academic Council). A second would be to form a new university-level committee.

Admissions staff and First Year of Studies advisors tell us that the number of students who have taken these exams is small but growing.

E. Additional Issues

We wish to raise two additional matters regarding AP credit policy. First, students from both the Admissions Advisory Group and in the focus groups conducted in 2009 by First Year of Studies expressed difficulty in filling out their first year schedules when they had numerous AP credits.¹⁶ Some students wished to use the flexibility provided by the AP credit to move into their majors more quickly, or to take electives in other fields, but because freshmen register last there was no space left in those classes. Furthermore, because first year students have not yet declared majors, students may not be allowed to take some major courses in the first year (though FYS works with students and departments on this). A couple of students went as far as to say that the spring semester of the first year is wasted when one has significant AP credit, since none of the available classes counts for any requirement and the interesting electives are filled.

This problem may be exacerbated if the new Core requires fewer courses or allows more double-counting of courses, since more students will find that they have extra space to fill in their spring semester. We recommend that any AP credit policy (and curriculum policy more generally) be attentive to these structural issues in the first year.

Second, both advisors and students raised the concern that a less generous policy would disadvantage students without AP credit. The argument is that if no AP credit were accepted, high-achieving students and students from stronger educational backgrounds would be thrown into introductory classes along with less prepared students. Students who had little or no credit were concerned that this would adversely affect both the curve and the pace of the class.

¹⁶ First Year of Studies, University of Notre Dame, “Advanced Placement Credit Study,” 2009.

Tables and Figures

Table 1
Requirements for Course Credit by AP Exam

Advanced Placement Exam	AP Grade Required	Number of Credits	Notre Dame Course Credited
Biology	5	8	Biological Sciences 10098 and 10099
Biology	4	3	Biological Sciences 10101
Calculus AB	5	4	Mathematics 10550
Calculus BC	5	8	Mathematics 10550
Calculus BC/AB Subscore	5	4	Mathematics 10550
Chemistry	5	4	Chemistry 10171
Chemistry	4	3	Chemistry 10101
Economics (Micro)	5	3	Economics 10010
Economics (Macro)	5	3	Economics 10020
English (either exam)	4	3	Writing and Rhetoric 13100
Government (American Politics)	5	3	Political Science 10098
Government (Comparative)	5	3	Political Science 10099
Latin	4	8	Latin 10001, 10002
Latin	3	4	Latin 10001
Physics B	5	6	Physics 10091, 10092
Physics C, Mechanics	5	4	Physics 10093
Physics C, Mechanics	4	4	Physics 10095
Physics, C, Elect. & Magnetism	5	4	Physics 10094
Physics, C, Elec. & Magnetism	4	4	Physics 10096
Psychology	5	3	Psychology 10000
Statistics	5	3	Applied and Computational Mathematics and Statistics 10145

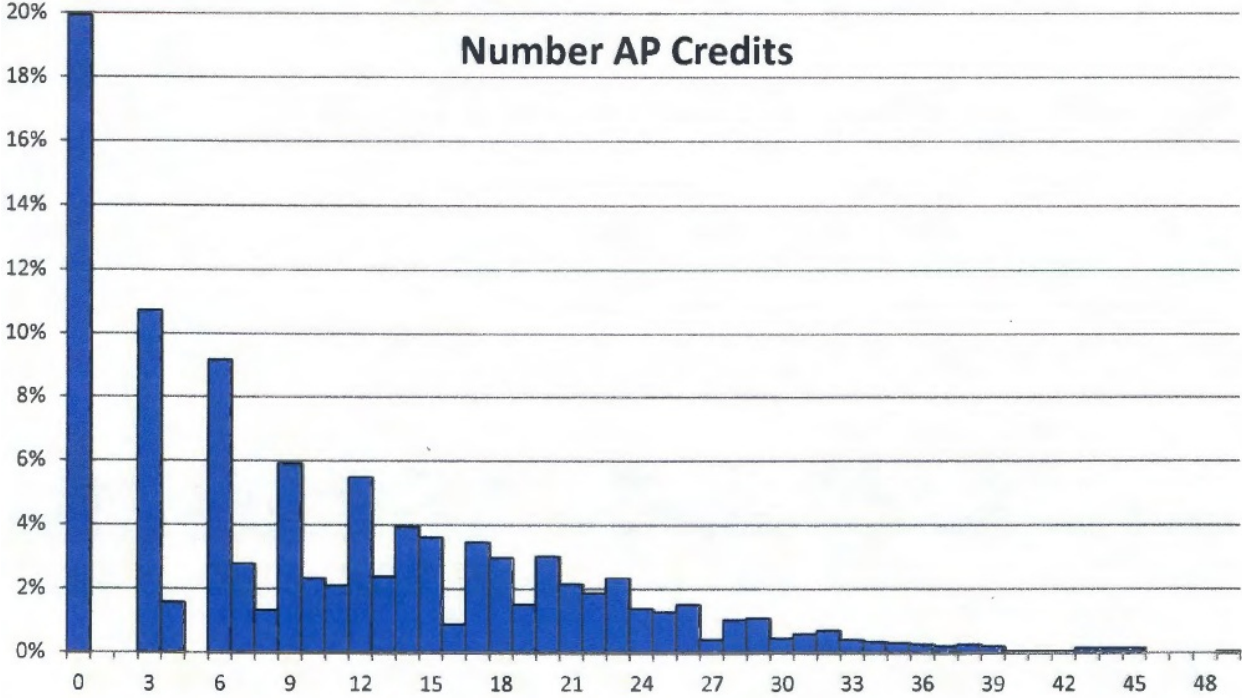
Source: University Bulletin, 2014-2015.

Table 2
Effects of AP/IB Credits on Students' Overall Course of Studies (Survey Responses)

Answer	Student Survey		Alumni Survey	
	Selected	# Responses	Selected	# Responses
Having time to pursue another major or minor	59%	827	52%	478
Having time for more electives	72%	1005	78%	712
Feeling less stress about completing 15 credits each semester	42%	586	33%	298
Being able to graduate early	5%	75	5%	50
Being able to take more than the minimum required number of courses in my major	46%	640	46%	417
Starting my coursework at a more advanced level	62%	866	73%	663
Total Respondents	1405		914	

Source: Student Survey and Alumni Survey, Office of Strategic Planning and Institutional Research, Spring 2015. The question was “What effect(s) did your AP/IB credits have on your overall course of studies?” The question was only asked of students/alumni who entered with some AP credit. For the students, only juniors and seniors were asked to respond; for the alumni survey, only graduates of the classes of 2012 and 2008 were asked.

Figure 1
Distribution of AP Credit for the Class of 2013



Source: College Board, "AP Research at University of Notre Dame," Spring 2014.

Figure 2a
Sources of Credit for Core Courses, Class of 2013

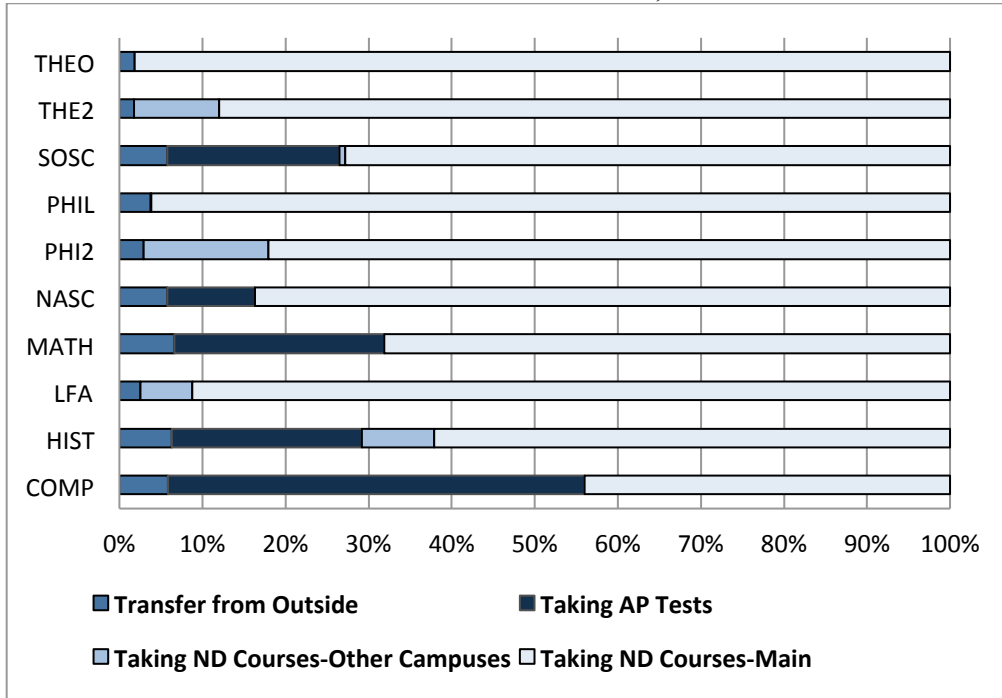
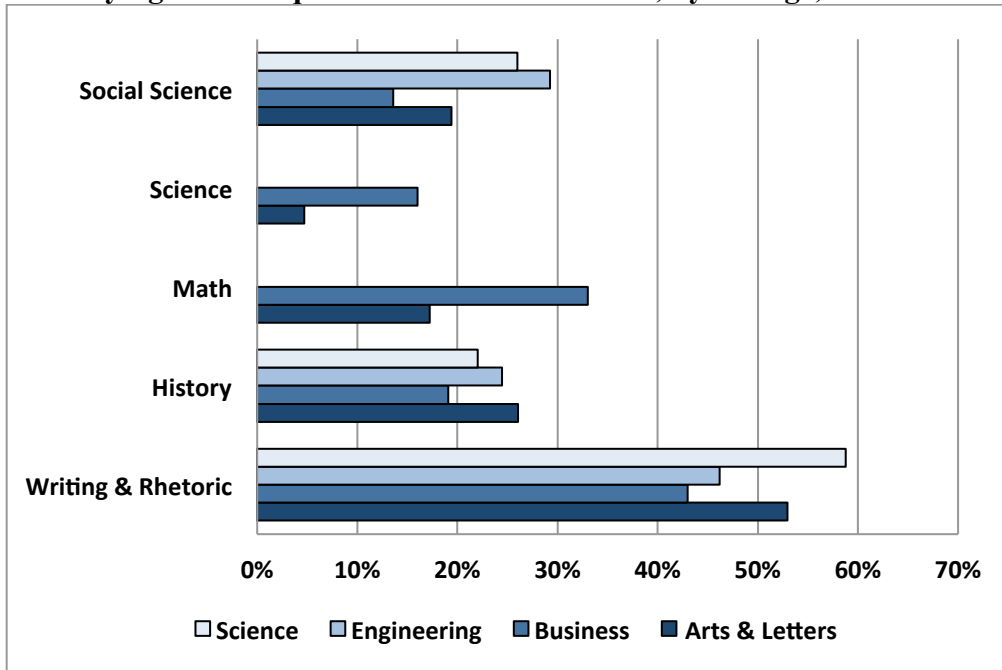
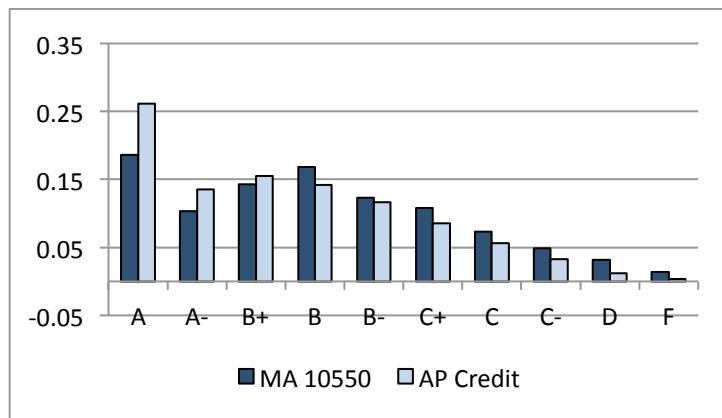


Figure 2b
Percent Satisfying Core Requirements with AP Credit, by College, for the Class of 2013

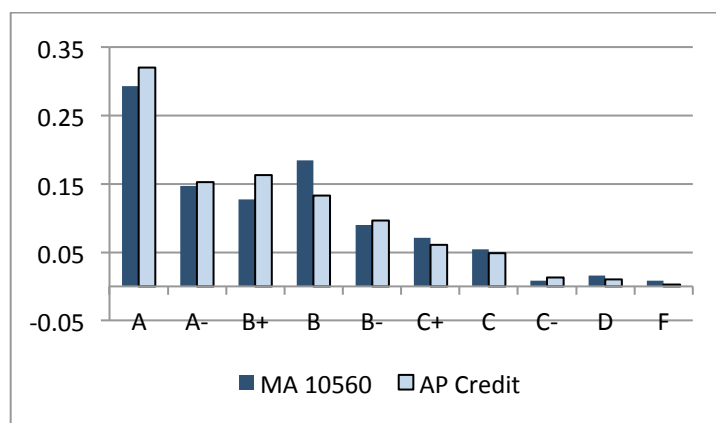


Source: Report prepared by Office of Strategic Planning and Institutional Research for the Core Curriculum Review Committee, Fall 2014.

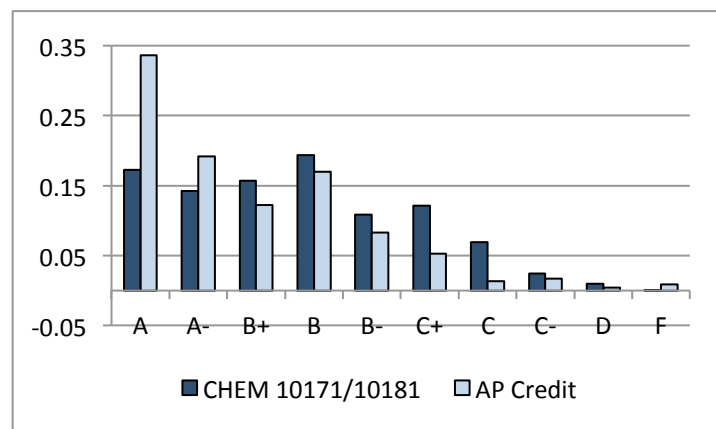
Figure 3
Grade Distribution in Courses by Source of Credit for the Prerequisite



3a: Math 10560 (Calculus II)



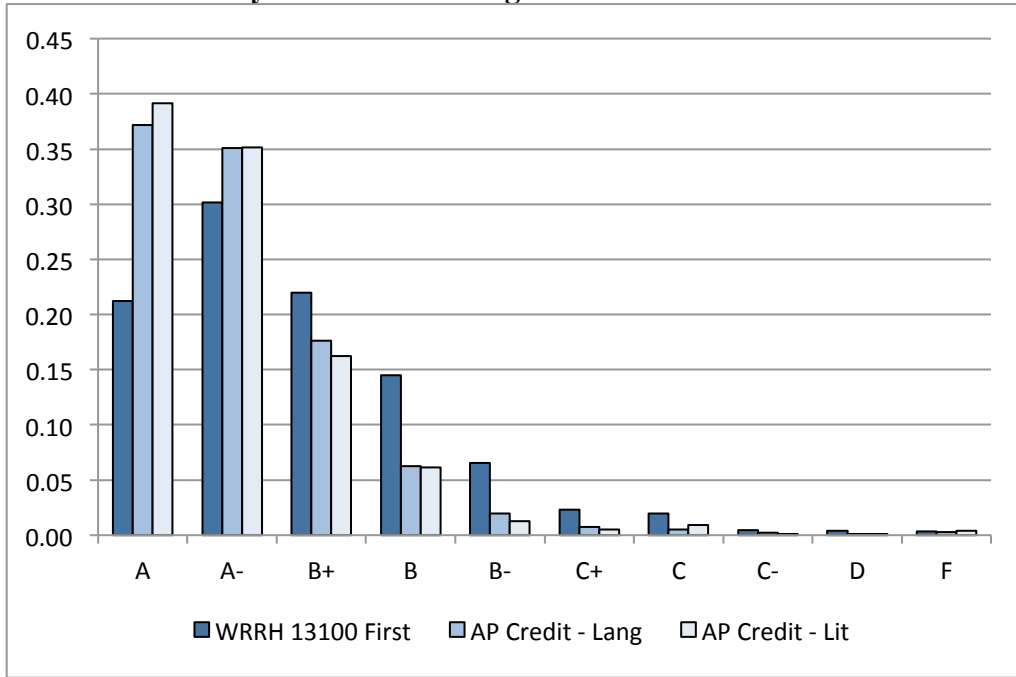
3b: Math 20550 (Calculus III)



3c: Chemistry 10122 (General Chemistry)

Source: Report prepared by Office of Strategic Planning and Institutional Research for AP Focus Group, April 2015. Data are from courses taken between Summer 2011 and Spring 2014. Information on sample sizes is available in the Appendix.

Figure 4
Grade Distribution in Spring University Seminars
by Source of Writing and Rhetoric Credit



Source: Report prepared by Office of Strategic Planning and Institutional Research for AP Focus Group, April 2015. Data are from courses taken in the spring of 2012, 2013, and 2014. Information on sample sizes is available in the Appendix.

Appendix

A. Focus Group Meetings and Communications with External Groups

Enrollment Division Student Advisory Group. Most of the members of the focus group met with the advisory group on Tuesday, February 10, 2015. Those in attendance included the following undergraduate Notre Dame students: Benjamin Fouch (Business), Therese Germain (Economics and Chinese), Olivia Godby (Liberal Studies), Jeffrey Hansen (Biology), Ryan Schools (Chemical Engineering), Austin Swift (Film, Television, and Theatre), Julia Tombari (Business), and Matt Zacjac (Accountancy).

First Year of Studies. Many of the advisors in the First Year of Studies—including Dean Hugh Page—met with most of the Focus Group members on March 3, 2015. The advisors invited to attend included: Steve Brady, Elly Brenner, James Creech, Maureen Dawson, Jenny Fox, Liz La Fortune, Don La Salle, Erin Lemrow, Cecilia Lucero, Holly Martin, Kevin Rooney, Ray Sepeta, Kasey Swanke, Mel Tardy, Leonor Wangenstein-Moya, Michelle Ware, Sean Wernert, Maryam Zomorodian.

University Writing Program: Focus Group members met with John Duffy (Francis O'Malley Director, University Writing Program), Matthew Capdevielle (Director of the University Writing Center), Patrick Clauss (Director, First Year Writing and Rhetoric) on March 3.

An e-mail was also sent to academic advisors from each of the Colleges inviting comment on how current AP policy affects students in that college. We received responses from Cathy Pieronek (Engineering), Father Richard Bullene (Architecture), Dale Nees (Business), and Kathleen Kolberg (Science).

B. Description of College Board Report on AP at Notre Dame

The College Board prepared a report on the use of AP credit at Notre Dame, with an emphasis on STEM majors (Science, Technology, Engineering, and Math). The report includes public and private high school students in the United States and abroad who graduated high school in 2013 and who sent AP scores to Notre Dame between March 1, 2013 and October 31, 2013. The report includes all AP Exams taken by this population during high school. Students who send AP scores to an institution between March 1 and October 31 of their high school graduation year have more than a 90% likelihood of matriculating at that institution. The researchers tried to align their data as closely as possible with students who actually enrolled at Notre Dame. For this reason, the researchers did not include students who sent scores to Notre Dame outside of this period of time. To show a snapshot of the data show for 2013 AP test takers and exams:

- 1,588 students reported scores to Notre Dame, with 1,576 reporting scores of 3 or higher.
- 10,118 exams were reported.
- 76% of the students were White, 9% Asian/Asian American/Pacific Islander, 8 % Hispanic/Latino, and 7% were from low-income families.

C. Data from Office of Strategic Planning and Institutional Research report on course performance by source of credit, Spring 2015.

At the request of the AP Focus Group, the Office of Strategic Planning and Institutional Research compiled data for four courses with prerequisites that could be satisfied with AP credit, and for University Seminars (USEM) . Data are from courses taken between Summer of 2011 and Spring of 2014. For some of the analysis of the USEM courses, only spring semester courses were used to capture students who would likely have taken WR 13100 in the preceding fall semester.

Below are sample statistics, including sample sizes, for the courses included in the report. The full report, including grade distributions, is available upon request.

Math 10560 (Calculus II)

	Mean	Median	Mode	Standard Deviation	Valid N
10550 prereq, no AP Calc AB score	2.87	3.00	4.00	.94	297
10550 prereq, AP Calc AB score 1-3	2.78	3.00	3.00	.82	156
10550 prereq, AP Calc AB score 4	3.07	3.00	4.00	.74	201
10550 prereq, AP Calc AB score 5	3.31	3.33	4.00	.63	60
Prereq Group Total	2.95	3.00	4.00	.85	714
No prereq, no AP Calc AB score	3.02	3.33	4.00	1.13	43
No prereq, AP Calc AB score 1-3	2.89	3.33	3.67	1.28	9
No prereq, AP Calc AB score 4	3.44	3.50	4.00	.53	16
No prereq, AP Calc AB score 5	3.17	3.33	4.00	.74	585

Math 20550 (Calculus III)

	Mean	Median	Mode	Standard Deviation
10560 prereq, no AP Calc BC score	3.57	4.00	4.00	.53
10560 prereq, AP Calc BC score 1-3	3.33	3.33	3.00	.47
10560 prereq, AP Calc BC score 4	3.20	3.33	2.33	.69
10560 prereq, AP Calc BC score 5	3.22	3.33	4.00	.76
Prereq Group Total	3.23	3.33	4.00	.75
No prereq, no AP Calc BC score	2.79	2.67	2.00	.82
No prereq, AP Calc BC score 1-3	2.47	2.67	2.67	1.04
No prereq, AP Calc BC score 4	2.68	2.67	2.00	.76
No prereq, AP Calc BC score 5	3.31	3.33	4.00	.70

Chemistry 10122 (General Chemistry)

	Mean	Median	Mode	Standard Deviation	Valid N
10171/01081 prereq, no AP Chem score	3.04	3.00	3.00	.70	795
10171/01081 prereq, AP Chem score 1-3	3.01	3.00	3.00	.63	130
10171/01081 prereq, AP Chem score 4	3.16	3.33	3.00	.63	159
10171/01081 prereq, AP Chem score 5	3.63	3.67	4.00	.53	46
Prereq Group Total	3.08	3.00	3.00	.69	1130
No prereq, no AP Chem score	2.98	3.17	4.00	.89	42
No prereq, AP Chem score 1-3	3.00	3.00	3.00	.67	9
No prereq, AP Chem score 4	3.11	3.17	2.33	.69	6
No prereq, AP Chem score 5	3.37	3.67	4.00	.69	229

Chemistry 10172 (Organic Structure and Reactivity)

	Mean	Median	Mode	Standard Deviation	Valid N
10171/01081 prereq, no AP Chem score	2.82	2.67	2.67	.83	738
10171/01081 prereq, AP Chem score 1-3	2.75	2.67	2.67	.74	168
10171/01081 prereq, AP Chem score 4	2.95	3.00	3.00	.71	168
10171/01081 prereq, AP Chem score 5	3.36	3.67	4.00	.68	129
Prereq Group Total	2.89	3.00	4.00	.80	1203
No prereq, no AP Chem score	2.87	3.00	3.67	.79	127
No prereq, AP Chem score 1-3	2.86	3.00	3.33	.61	17
No prereq, AP Chem score 4	3.04	3.00	3.00	.58	19
No prereq, AP Chem score 5	2.84	3.00	3.00	.78	47

University Seminars (Spring only)

		Mean	Median	Mode	Standard Deviation	Valid N
WRRH first	No AP English scores	3.41	3.67	3.67	.57	1213
	Lit & Comp score 1-3	3.42	3.67	3.67	.48	243
	Lit & Comp score 4	3.62	3.67	3.33	.30	7
	Lit & Comp score 5	3.83	3.83	3.67	.24	2
	Lang & Comp score 1-3	3.35	3.33	3.67	.47	204
	Lang & Comp score 4	3.27	3.33	2.33	.64	5
	Lang & Comp score 5	3.78	4.00	4.00	.39	3
USEM first	No AP English scores	3.44	3.67	3.67	.67	46
	Lit & Comp score 1-3	3.55	3.67	3.67	.40	147
	Lit & Comp score 4	3.61	3.67	3.67	.44	467
	Lit & Comp score 5	3.70	3.67	4.00	.46	315
	Lang & Comp score 1-3	3.60	3.67	4.00	.39	43
	Lang & Comp score 4	3.59	3.67	4.00	.47	488
	Lang & Comp score 5	3.68	3.67	4.00	.40	483

Note: “Lit & Comp” refers to the AP English-Literature and Composition exam. “Lang and Comp” refers to AP English-Language and Composition. In the top panel, students took WR 13100 before taking the USEM course. In the bottom panel, students had not previously taken WR 13100.

D. Data on Peer Institutions

Institution	Advanced Placement	Apply AP to Core?	Core or distributive requirements
Brown University (1 core course)	Advanced Placement exam scores are not eligible for course credit at Brown, but students may use certain AP scores to enroll in higher-level courses, to satisfy concentration requirements, or to advance their semester standing.	N/A	(Only 1 requirement) Writing requirement, there are three types of courses students can take to meet the writing requirement. All three types engage students in the writing process, provide them with feedback on their prose, and provide opportunities for revision. (1) Writing-designated (WRIT) courses provide students with feedback about their writing and opportunities to apply that feedback on the same assignment or when completing writing assignments later in the course. Offered in nearly all departments, WRIT courses for a particular semester may be viewed in the Banner class schedule by selecting "Writing-Designated Courses" in the Attribute Type section. (2) Writing Fellows courses allow students to work on their writing with a Brown undergraduate, called a Writing Fellow, who has been trained in composition and pedagogy. Writing Fellows read drafts of student papers and meet in conferences with student writers to discuss the drafts. When grading papers, professors in Writing Fellows courses consider both the process the student went through and the final product. (3) English, Comparative Literature, and Literary Arts courses all meet the writing requirement. Students are especially encouraged to enroll in English 110, which focuses on critical reading and writing, or English 130, which focuses on the research essay. Other popular courses focus on journalistic writing (English 160) and creative nonfiction (English 180).
Columbia University (13 core courses)	College Board Advanced Placement scores cannot be used toward exemption from any of the Core Curriculum courses; however, scores may be used toward satisfying the foreign language requirement. Each year, individual departments review the College Board AP curriculum and determine appropriate placements, credit, and/or exemptions.	No	Core: Science--3 courses, global--2 courses, literature humanities--1 course, foreign language--second term of an intermediate language sequence, contemporary civilization--(year-long course), art humanities--1 course, music humanities--1 course, frontiers of science--1 course, university writing--1 course, global core--2 courses, PE--1 course

Institution	Advanced Placement	Apply AP to Core?	Core or distributive requirements
Cornell University (depends)	Advanced placement credit is college credit that students earn before they matriculate as freshmen and that may count toward the degree and/or degree requirements as specified by the individual college at Cornell. Its primary purpose is to exempt students from introductory courses and to place them in advanced courses. Its value is that it allows students to include more advanced courses in their course of study. The appropriate department of instruction within the university sets the standards of achievement that must be met for advanced placement in its subject, recommends Advanced Placement credit for those who meet the standards, and determines whether students place out of certain Cornell courses. The final decision for awarding advanced placement credit at Cornell and applying it to degree requirements rests with each individual college. Students need not accept advanced placement, although forfeiting the advantage of moving quickly into advanced courses affects one's overall education. If they take the Cornell course they have placed out of, they relinquish the advanced placement credit.	Yes	Depends on school. No core curriculum for the College of Arts and Sciences.
Dartmouth College (11 core courses)	Dartmouth grants credit on entrance for AP and IB examinations, as well as offers exemptions and placement in some subject areas. Credit on entrance appears on the Dartmouth transcript and does not count towards the 35 credits required to graduate. Dartmouth will provide credit for AP/IB but then place student in higher course.	No	Distributive: World Culture Requirement. Each student must take and pass one course in each of three areas: Western Cultures, Non-Western Cultures, and Culture and Identity. Further, each student must take and pass ten courses, as follows: 1 in the Arts;1 in Literature;1 in Systems and Traditions of Thought, Meaning, and Value;1 in International or Comparative Study;2 in Social Analysis; 1 in Quantitative and Deductive Sciences;2 in the Natural Sciences; 1 in Technology or Applied Science; 1 of the courses in the Natural Science or Technology categories must have a laboratory, field, or experimental component.

Institution	Advanced Placement	Apply AP to Core?	Core or distributive requirements
Duke University (about 21 core courses)	<p>Advanced Placement, International Placement Credits, and Pre-Matriculation Credits do not count toward the general education requirements (Areas of Knowledge and Modes of Inquiry) and only two of them may be counted at matriculation toward the 34 needed to graduate. Trinity College draws a distinction between college-level work completed prior to matriculation at Duke and work completed at another college or university after matriculation at Duke. Trinity College recognizes three types of pre-college work for which students may receive a limited amount of elective credit at Duke at matriculation: AP, International Placement Credit, Pre-matriculation Credit. Trinity College will record on permanent Duke records courses of these three types completed prior to matriculation at Duke. The three types of pre-college course work are regarded as equivalent and may be used for placement into higher-level course work and to satisfy major and minor requirements to the extent allowed by individual departments. Additionally, up to two of these elective credits will apply toward the degree requirement of 34 course credits. APs, IPCs, and PMCs are not given Areas of Knowledge designations or Modes of Inquiry codes and may not be used to fulfill continuation or graduation requirements except as elective credits toward graduation.</p>	No	<p>Depends on college/school (distributive). College of Arts and Sciences: At the core of the Curriculum are four sets of specific curricular requirements:</p> <ul style="list-style-type: none"> • Areas of Knowledge requirements lend breadth to your education by introducing you to the full range of disciplines taught at Duke. • Modes of Inquiry requirements insure that you will engage certain important cross-cutting intellectual themes and prepare you to leave Duke having developed proficiencies that will serve you later in life. • Small Group Learning Experiences assure opportunities to engage in discussion, develop skills, refine judgment, and defend ideas when challenged. • The Major provides depth of exposure to one discipline and its methodologies that will enable you to develop a degree of expertise in that area. <p>The curriculum recognizes five Areas of Knowledge:</p> <ol style="list-style-type: none"> (1) Arts, Literatures, and Performance (2 Courses Required) (2) Civilizations (2 Courses Required) (3) Natural Sciences (2 Courses Required) (4) Quantitative Studies (2 courses are required and, beginning with the class that matriculated in 2012, one of these must be a course that originates or is cross-listed in mathematics, statistics or computer science) (5) Social Sciences (2 Courses Required) <p>Modes of Inquiry:</p> <ol style="list-style-type: none"> (1) Cross-Cultural Inquiry (CCI) (2 Courses Required) Ethical Inquiry (EI) (2 Courses Required) (2) Science, Technology, and Society (STS) (2 Courses Required) (3) Foreign Language (FL) (1 to 3 Courses Required) Research (R) (1 course) (4) Writing (W) (Writing 101 and 2 additional courses coded W required). (5) Small Group experiences: First-Year Seminar Requirement (1 Course Required) Small Group Learning Experience Requirement (2 Courses Required)

Institution	Advanced Placement	Apply AP to Core?	Core or distributive requirements
Emory University (17 core courses)	<p>Emory College grants three semester hours of credit for each score of 4 or 5 on examinations of the Advanced Placement Program of the College Entrance Examination Board. In the case of Advanced Placement examinations in which two exams are offered (i.e., English, foreign languages, computer science), credit may be awarded for either exam but not for two. The Mathematics Department awards six hours credit for a score of 4 or 5 on the Calculus BC exam. Students receiving credit for the BC exam cannot receive credit for the Calculus AB exam as well. Students who do not receive credit for Calculus BC but score 4 or 5 on the Calculus AB subgrade will receive three hours credit for the subgrade. No credit is granted in Emory College for scores below 4. Emory awards no academic credit for AP work that has not been placed on the student's official transcript by the end of that student's first semester of study on campus. No credit is granted for the Human Geography or International English Language exams. Students can receive no more than twenty-four (24) credit hours for AP and IB exams. General Education requirements can be waived in areas covered by the exams for which credit cannot be conferred. Students who want to waive AP credit must do so officially by the end of their first semester at Emory College. A students who has received A.P. credit and wants to take the equivalent course at Emory cannot count those additional credits toward graduation.</p>	Yes	<p>Distributive: The general education component of an Emory undergraduate education is organized to present an array of intellectual approaches and perspectives as ways of learning rather than a prescribed body of content. Its purposes are to develop students' competencies in the skills and methods of writing, quantitative methods, a second language, and physical education; to acquaint students with methodologies that characterize the humanities, the social sciences, and the natural sciences as the three broad divisions of learning in the arts and sciences; to deepen students' perspectives on national, regional, and global history and culture, and to give every student some exposure to an interactive seminar experience. These purposes are met by a student's choosing from a range of individual courses within a clearly defined framework. 9 areas: (1) first-year seminar--1 course; (2) first-year writing--1 course; (3) continuing writing--3 courses; (4) math & quantitative reasoning--1 course; (5) science, nature, technology--2 courses; (6) history, society, cultures--2 courses; (7a) humanities, arts, performance--4 courses; (7b) humanities, arts, language--intermediate level; (8) personal health--1 course; (9) physical education and dance--2 courses.</p>

Institution	Advanced Placement	Apply AP to Core?	Core or distributive requirements
Georgetown University (12 core courses)	Georgetown participates in the College Board Advanced Placement Program and awards course exemptions and college credit to entering students with qualifying scores. Students taught college-level courses by high school faculty are not eligible for credit in those courses, but are encouraged to take the Advanced Placement Examinations in order to be considered for credit. Students who have had occasion to take one or two regular college courses while in high school should submit an official college transcript for evaluation prior to enrollment. Students who are enrolled in joint high school/college programs (taking college courses on college campuses while working concurrently for high school and college credit) are advised to apply as first year students, but should not expect credit for more than four courses. Participation in such programs will not significantly shorten the length of a degree program at Georgetown. Transfer credit will be awarded for the French Baccalaureate, the Italian Maturità, the Swiss Maturité, the German Abitur, and the British A-Levels. Up to a year of credit is awarded for subjects in which students have taken a national or state examination. Language credit is awarded based on placement. Final credit will be determined by the program in which students matriculate and upon departmental review.	Yes	Distributive: Georgetown College core requirements include: writing--1 course, Humanities/arts, literatures/cultures--1 course, history--2 courses, theology--2 courses, philosophy--2 courses, math/science--2 courses, social science--2 courses, foreign language--intermediate level.
Northwestern University (12 core courses)	Each year over 90-percent of the University's incoming freshmen receive advanced placement credit. Northwestern acknowledges the educational value of AP courses by granting credit and/or placement as indicated at the link below. In some fields, primarily the sciences and foreign languages, advanced placement and/or credit can be earned through appropriate performance on examinations administered by Northwestern departments, usually during Wildcat Welcome Week.	Yes	Depends on the School. Engineering (distributive): To ensure they become well-rounded engineers, all McCormick students must complete the Social Science / Humanities Theme Requirement (or "Theme") in which they develop an area of competency related to humanities. Students must complete seven courses related to their approved focus. Courses approved for use in the theme are categorized into three very broad areas: Fine Arts, Language, & Literature (FAL) Historical Studies & Values (HSV) Social & Behavioral Sciences (SBS) College of Arts and Sciences: 2 courses in 6 intellectual areas of study (but quarter system). Areas of study: Natural Sciences (Area I) Formal Studies (Area II) Social and Behavioral Sciences (Area III) Historical Studies (Area IV) Ethics and Values (Area V) Literature and Fine Arts (Area VI)

Institution	Advanced Placement	Apply AP to Core?	Core or distributive requirements
Princeton University (12 core courses)	Students can use AP credits to enter upper-level courses or to fulfill the foreign language requirement. In a few cases, students who have earned a large number of AP credits use them to graduate early through advanced standing. AP credits may not be used to fulfill the writing requirement, reduce students' course load in a given term or fulfill the distribution requirements.	No	General Education Requirements for A.B. Students: Writing seminar--1 course, foreign language--intermediate, epistemology/cognition--1 course, ethical thought and moral values--1 course, historical analysis--1 course, literature and the arts--2 courses, quantitative reasoning--1 course, science and technology--2 courses, social analysis--2 courses
University of Chicago (15 quarter courses)	In order to earn a degree from the College of the University of Chicago, a student must obtain credit for at least forty-two quarter courses, distributed among general education requirements, major program requirements, and electives, as described in the section on the curriculum at the front of this publication. All students receive credit toward their degrees by taking courses in the College. In addition, students may receive credit and/or satisfy College requirements in the following ways: by placement test; by Advanced Placement (AP) examinations; by accreditation examination; by International Baccalaureate (IB) Programme; and by advanced standing, which is credit transferred from another institution. Placement tests serve to adapt the needs and backgrounds of individual students to the College curriculum. They place entering students at the proper level of study in a given subject and may be used to award academic credit where appropriate. On the one hand, placement tests minimize the repetition of subjects already mastered and, on the other, they reduce the possibility that students might begin their programs with courses for which they are inadequately prepared. Placement tests measure skill in problem solving as well as general knowledge in a subject field. Students who have some background in the areas being tested are urged to review it, but incoming students without such knowledge are not expected to acquire it over the summer preceding entrance.	Yes	Distributive: Humanities/civilization Studies/arts--6 quarters, natural/mathematical sciences--6 quarters, social sciences--3 quarters, language requirement
University of Notre Dame (14 core courses)	Students who submit results of Advanced Placement examinations are eligible to receive credit according to the published schedule of credits for each relevant department.	Yes	Distributive: writing/rhetoric--1 course, mathematics--2 courses, science--2 courses, history--1 course, social science--1 course, theology--2 courses, philosophy--2 courses, fine arts & literature--1 course, PE--2 courses

Institution	Advanced Placement	Apply AP to Core?	Core or distributive requirements
University of Pennsylvania (8 core courses)	The University of Pennsylvania may award credit or advanced course standing to students who have taken Advanced Placement or International Baccalaureate examinations. Scores warranting University credit vary by department. Some departments offer no credit.	Yes (except writing requirement)	Distributive or "structured choice" and depends on school at University: 8 courses--Writing seminar--1 course, plus combination of social sciences, humanities, technology/business/society.
Vanderbilt University (18 core courses)	The well-established advanced-placement policy endeavors to recognize exceptional high school preparation, to avoid requiring freshmen to take courses clearly mastered in high school, and to encourage students to begin their college learning experience at the level most appropriate to their preparation. Advanced placement may be decided on the basis of good performance on the College Board Advanced Placement Examinations, on the College Board SAT II Subject Tests, on International Baccalaureate tests, or, in some cases, on placement tests given by Vanderbilt. At the determination of individual departments, Advanced Placement Examination grades with a score of 4 or 5 may be accepted for credit. The amount of credit that may be awarded corresponds to the course work waived, up to a maximum of 8 hours in any subject area. Advanced Placement credit does not affect the Vanderbilt grade point average. Students of the College of Arts and Science are limited to a total of 18 credit hours earned by any combination of advanced placement, international baccalaureate credit, advanced international credit, and credit by departmental examination, counting toward the minimum number of hours required toward the degree. No form of advanced placement credit can be used in fulfillment of the Achieving Excellence in Liberal Education (AXLE) requirements for students in the College of Arts and Science. Credit depends on department.	Yes & No (for College of Arts and Science)	<p>Depends on the School. Engineering (distributive): In order to provide the elements of a general education considered necessary for responsible practice as an educated engineer, the School of Engineering requires each student to complete at least 18 hours in the Liberal Arts Core. The Liberal Arts Core will be selected from courses in the five distribution categories designated in the AXLE Curriculum Course Distribution of the College of Arts and Science: a) Humanities and the Creative Arts, including English 100 b) International Cultures, including Arabic 210A, Chinese 200A/B, 201, French 101A, German 101, Greek 201, Hebrew 111a, Italian 101a, Japanese 200ab and 201, Latin 101, Portuguese 100a, Russian 101, Spanish 100 and 101 c) History and Culture of the United States d) Social and Behavioral Sciences, including Engineering Management 244 e) Perspectives, including Computer Science 151; and the distribution categories of: f) Music Composition and Performance All MUSC, MUSE, MUSO, and MUSP courses in the Blair School of Music g) Cognition and Development All Peabody College courses in Psychology and Human Development numbered 1200-2000, 2230-2470, and 2560-2610, and in Human and Organizational Development numbered 1000, 1100, 1200-1800, and 2240-2280.</p> <p>Within the 18-hour requirement, the student must meet the following distribution requirements:</p> <ol style="list-style-type: none"> 1. At least 3 credit hours in each of at least three different categories 2. At least 6 credit hours in one category

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