



## **AP<sup>®</sup> Student Success at the College Level** Recent Research

# AP<sup>®</sup> Courses and Exams

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## Arts

Art History  
Music Theory  
Studio Art: 2-D Design  
Studio Art: 3-D Design  
Studio Art: Drawing

## Capstone

AP<sup>®</sup> Research (2015)  
AP Seminar (2014)

## English

English Language and Composition  
English Literature and Composition

## History and Social Science

Comparative Government and Politics  
European History  
Human Geography  
Macroeconomics  
Microeconomics  
Psychology  
United States Government and Politics  
United States History

## Math and Computer Science

Calculus AB  
Calculus BC  
Computer Science A  
Computer Science Principles (2016)  
Statistics

## Sciences

Biology  
Chemistry  
Environmental Science  
Physics 1 (2015)  
Physics 2 (2015)  
Physics B (discontinued 2015)  
Physics C: Electricity and Magnetism  
Physics C: Mechanics

## World Languages and Cultures

Chinese Language and Culture  
French Language and Culture  
German Language and Culture  
Italian Language and Culture  
Japanese Language and Culture  
Latin  
Spanish Language and Culture  
Spanish Literature and Culture

# Research findings: AP student success at the college level

Strong AP programs in high schools, coupled with strong AP policies at colleges, support many positive outcomes for students.

**Multiple research studies have confirmed the following benefits for AP students who achieve scores of 3 or higher on an AP Exam.**

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- 1** AP students perform well in subsequent college courses in the discipline.

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  - 2** AP students are more likely to major in their AP subject or a related discipline, particularly in STEM subjects.

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  - 3** AP students take more — not less — college course work in the discipline.

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  - 4** AP students are more likely to graduate within four years.

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  - 5** AP provides opportunities for underserved students to succeed.

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**Sample:**

70,000 students at 27 institutions, followed for five years

**Outcomes analyzed:**

Intermediate course GPA, college majors

**Control variables:**

SAT® scores

**Full report:**

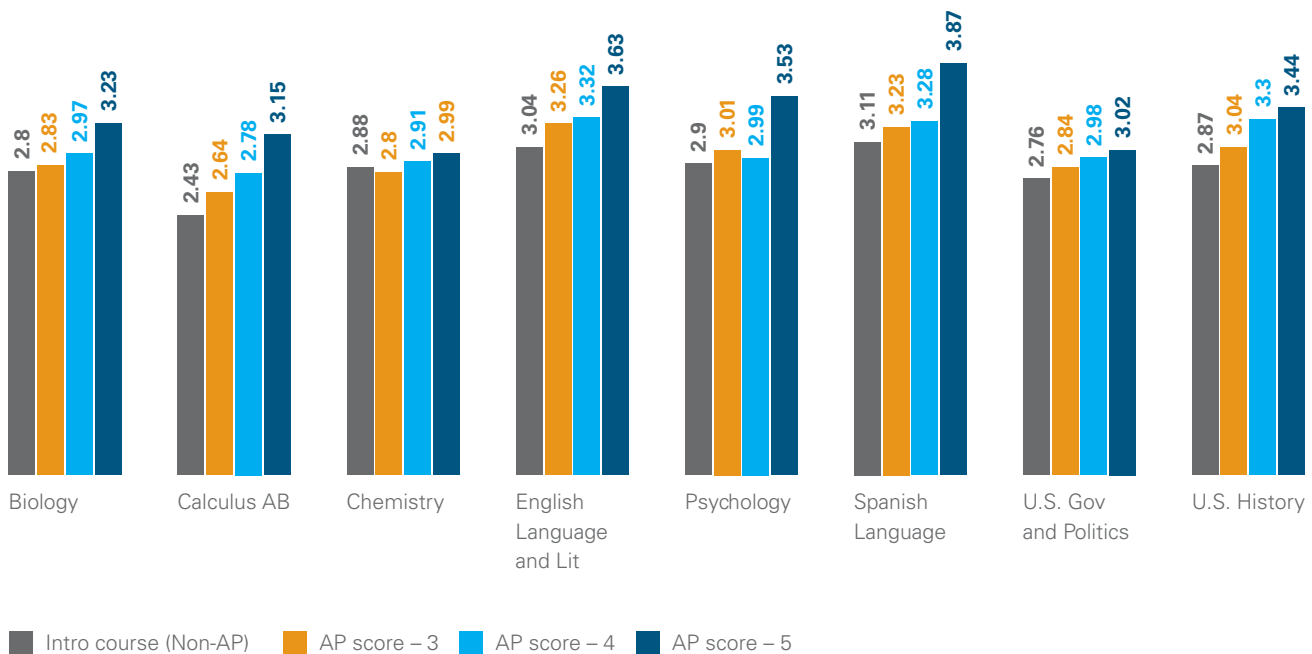
<http://bit.ly/WnOQBn>

# 1 AP students perform well in subsequent college courses in the discipline.

**Key finding**

A 2007 study<sup>1</sup> revealed a number of benefits for students earning a score of 3 or higher on an AP Exam. In most AP subjects, they performed the same as, or better than, non-AP students in the intermediate-level college course related to their AP Exam — even after controlling for prior achievement.

**Figure 1: GPA in the subsequent college course, by performance**



Adapted from Morgan and Klaric, 2007

1. Morgan, R., & Klaric, J., (2007). *AP Students in College: An Analysis of Five-Year Academic Careers*. New York: The College Board.

**Sample:**

40,000 students at 39 colleges

**Outcome analyzed:**

College major

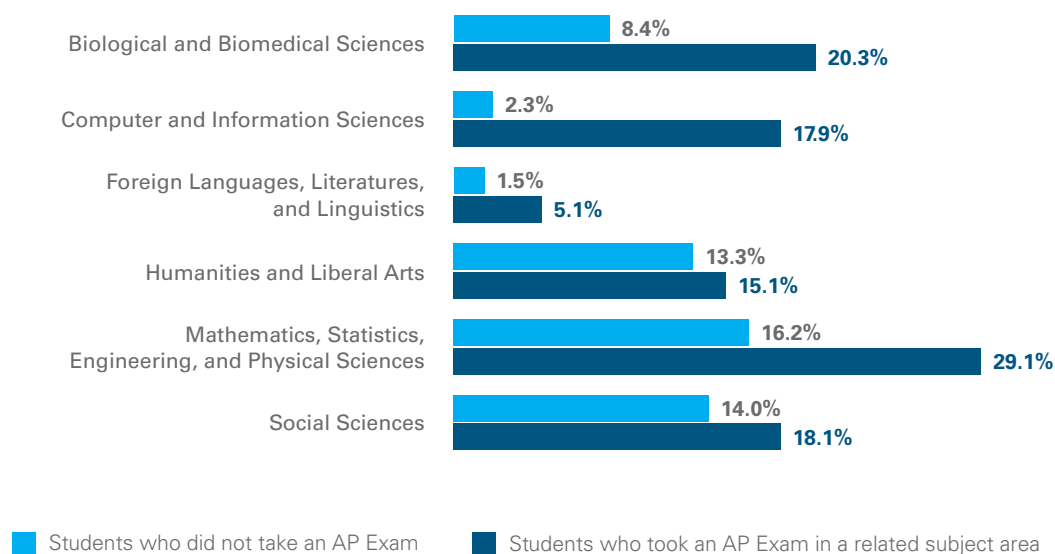
**Control variables:**SAT scores,  
demographic variables,  
highest parental education**Full report:**<http://bit.ly/YWbtTg>

## 2 AP students are more likely to major in their AP subject or a related discipline, particularly in STEM subjects.

**Key finding**

A 2011 study<sup>2</sup> revealed that the likelihood of majoring in a particular discipline increased with AP Exam taking in that discipline, the number of AP Exams taken in the discipline, and AP performance in the discipline. The effect is strongest for STEM majors. Also, students who took AP Exams were more likely to have declared a major than non-AP students. AP is a strong indicator of interest in a discipline, providing an opportunity for colleges to identify potential majors.

**Figure 2: Percentage of students majoring in a specific domain by AP participation**



Examined major at beginning of third year in college, not major upon graduation.  
Does not account for prior interest or motivation.

Adapted from Mattern, Shaw, and Ewing, 2011

2. Mattern, K. D., Shaw, E. J., and Ewing, M. (2011). *Is AP Exam Participation and Performance Related to Choice of College Major?* New York: The College Board.

**Sample:**

25,000 students in four cohorts enrolled at the University of Texas at Austin

**Outcomes analyzed:**

College GPA, number of college credit hours

**Control variables:**

High school rank, SAT scores

**Full report:**

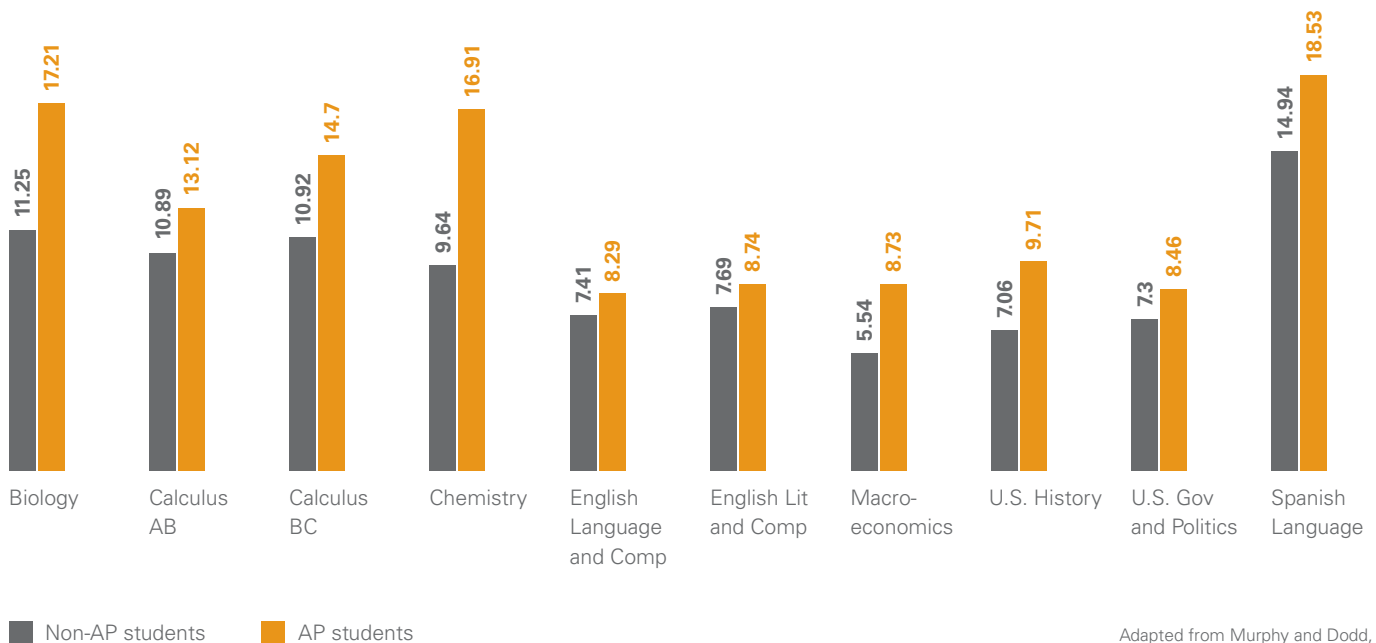
<http://bit.ly/13MGk11>

### 3 AP students take more — not less — college course work in the discipline.

**Key finding**

A 2009 study<sup>3</sup> found that AP students who took at least one AP Exam generally took more credit hours in that subject area and in college overall than did non-AP students. Additionally, AP students who earned course credit based upon their AP Exam scores had statistically significantly higher GPAs than students without AP credit, even after controlling for prior academic achievement.

**Figure 3: Mean subject credit hours taken in college, by AP participation**



Adapted from Murphy and Dodd, 2009

3. Murphy, D. and Dodd, B. (2009). *A Comparison of College Performance of Matched AP and Non-AP Student Groups*. New York: The College Board.

**Sample:**

**Sample 1** – 112,108 students at 77 colleges and universities (2007 college freshmen)

**Sample 2** – 678,305 students (2008 college freshmen who had taken AP, PSAT/NMSQT®, or SAT; matched to National Student Clearinghouse graduation data)

**Outcome analyzed:**

College graduation in four years

**Control variables:**

College selectivity, college control (public or private), PSAT/NMSQT scores, gender, underrepresented minority status, first generation college-going status

**Full report:**

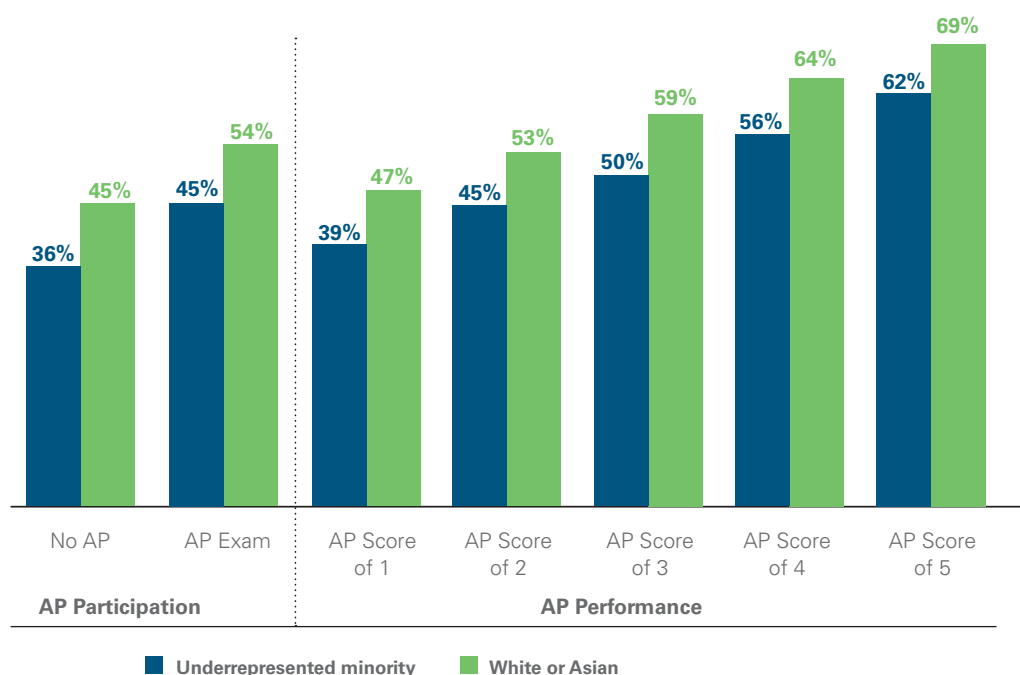
<http://bit.ly/1kTOJPu>

## 4 AP students are more likely to graduate within four years.

**Key finding**

A 2013 study<sup>4</sup> found that students who took one or more AP Exams, regardless of what score was earned, were more likely to graduate from college in four years compared to non-AP students. The effect was the same even after controlling for prior academic achievement, demographic variables, and school-level variables. In addition, students who earned higher scores on AP Exams had a higher likelihood of graduating in four years compared with students who earn lower scores, after controlling for relevant variables.

**Figure 4: Expected four-year graduation rate by AP participation and performance**



Adapted from Mattern, Marini, and Shaw 2013

4. Mattern, K. D., Marini, J. P., and Shaw, E. J., (2013) *Are AP Students More Likely to Graduate on Time?* New York: The College Board.

**Note:**

Expected graduation rates were computed based on Sample 1 models. These values are associated with non-first generation status females with an average PSAT/NMSQT score attending a public institution of average selectivity. Please see research report for all results.

**Sample:**

67,000 students at Texas public colleges and universities

**Outcome analyzed:**

College graduation rate

**Control variables:**

Eighth-grade math test scores, school-level characteristics

**Full report:**

<http://bit.ly/VRyzFK>

# 5

## AP provides opportunities for underserved students to succeed.

**Key finding**

A 2006 study<sup>5</sup> found that, even after controlling for prior academic achievement, student-level variables, and school-level variables, traditionally underserved students who earned a score of 3 or higher on at least one AP Exam had a higher probability of graduating from college in five years or less than non-AP students of the same ethnicity/socioeconomic status.

From 2003 to 2013, the number of underrepresented students graduating from high school having taken one AP Exam tripled. The number of low income students quadrupled.

**Figure 4: Increase in probability of college graduation within five years or less compared with students not participating in AP, by ethnicity and socioeconomic status**



Adapted from Dougherty, Mellor, and Jian, 2006

5. Dougherty, C., Mellor, L., and Jian, S. (2006). *The Relationship Between Advanced Placement and College Graduation*. National Center for Educational Accountability.



# Additional Research on AP Outcomes

## College Subject Performance

Sadler, P. M., & Sonnert, G. (2010). High school Advanced Placement and success in college in the sciences. In P. M. Sadler, G. Sonnert, R. H. Tai, & K. Klopfenstein (Eds.), *AP: A Critical Examination of the Advanced Placement Program* (pp. 119–137). Cambridge, MA: Harvard Education Press.

**Key finding: AP students perform at least as well as similar non-AP students in introductory courses.**

## Overall Performance

Scott, T. P., Tolson, H., & Lee, Y., T. (2010). Assessment of Advanced Placement participation and university academic success in the first semester: Controlling for selected high school academic abilities. *Journal of College Admission*, 208, 26–30.

**Key finding: Students who received AP credit outperformed non-AP students on first-year GPA.**

Geiser, S., & Santelices, V. (2004). The role of Advanced Placement and honors courses in college admissions. Center for Studies in Higher Education, University of California, Berkeley.

**Key finding: AP Exam scores are among the very best predictors of college performance.**

## College Completion

Dougherty, C, Mellor, L, & Jian, S. (2006). The relationship between Advanced Placement and college graduation. National Center for Educational Accountability.

**Key finding: Students who earn a 3 or higher on one or more AP Exams are more likely to graduate from college in five years or less even when controlling for prior academic achievement, demographic variables, and school-level variables.**

Tai, R. H., Liu, C. Q., Almarode, J. T., & Fan, X. (2010). Advanced Placement course enrollment and long-range educational outcomes. In P. M. Sadler, G. Sonnert, R. H. Tai, & K. Klopfenstein (Eds.), *AP: A Critical Examination of the Advanced Placement Program* (pp. 109–137). Cambridge, MA: Harvard Education Press.

**Key finding: AP participants are more likely to graduate from college than nonparticipants.**

## Majors

Tai, R. H., Liu, C. Q., Almarode, J. T., & Fan, X. (2010). Advanced Placement course enrollment and long-range educational outcomes. In P. M. Sadler, G. Sonnert, R. H. Tai, & K. Klopfenstein (Eds.), *AP: A Critical Examination of the Advanced Placement Program* (pp. 109–137). Cambridge, MA: Harvard Education Press.

**Key finding: AP participants are more likely to major in a related discipline than nonparticipants, particularly in STEM subjects.**

Ackerman, P. L., Kanfer, R., & Calderwood, C. (2011). Optimal AP Portfolios with Special Reference to Science, Technology, Engineering, and Math (STEM) Majors and Gender Differences.

**Key finding: AP participants are more likely to major in a related discipline than nonparticipants.**

## Essential AP Resources

Available on the AP higher ed website: [www.aphighered.org](http://www.aphighered.org)

- 1. AP course and exam descriptions or curriculum frameworks:** These documents, found on the page for each course and exam in the Courses & Exams section of the website, contain the learning objectives for AP courses and exams. Specific information is provided for redesigned courses and exams.
- 2. Released AP Exams:** Because they are considered to be secure material, these may be obtained only by contacting a College Board representative at [aphighered@collegeboard.org](mailto:aphighered@collegeboard.org).
- 3. Current research on student outcomes:** The Research & Reports section of the website includes both independent studies led by institutions across the country and College Board–sponsored research. Several of these research studies focus on placement validity, evaluating the success of AP students as they place into subsequent courses related to their AP Exam scores.
- 4. Summary of AP Scores Reported for your college:** You can order this report, which includes participation and performance data for the AP students who sent scores to your college, through a form in the Research & Reports section of the website.
- 5. National references:** American Council on Education credit and placement recommendations and the recommendations of national academic associations (e.g., National Science Foundation, American Council on the Teaching of Foreign Languages).
- 6. Placement validity studies and data services:** The College Board offers a free service — the Admitted Class Evaluation Service™ (ACES™) — to help facilitate a review of AP performance in subsequent courses. Visit [www.collegeboard.org/aces](http://www.collegeboard.org/aces) for more information. The College Board also regularly works with institutional researchers at colleges to develop and implement local, customized validity studies. To learn more, contact [aphighered@collegeboard.org](mailto:aphighered@collegeboard.org).





### **About AP®**

The College Board's Advanced Placement Program® (AP®) enables willing and academically prepared students to pursue college-level studies — with the opportunity to earn college credit, advanced placement, or both — while still in high school.

For further information, visit [www.aphighered.org](http://www.aphighered.org) or contact [aphighered@collegeboard.org](mailto:aphighered@collegeboard.org).

### **About the College Board**

The College Board is a mission-driven not-for-profit organization that connects students to college success and opportunity. Founded in 1900, the College Board was created to expand access to higher education. Today, the membership association is made up of over 6,000 of the world's leading educational institutions and is dedicated to promoting excellence and equity in education. Each year, the College Board helps more than seven million students prepare for a successful transition to college through programs and services in college readiness and college success — including the SAT® and the Advanced Placement Program®. The organization also serves the education community through research and advocacy on behalf of students, educators, and schools.

For further information, visit [www.collegeboard.org](http://www.collegeboard.org).

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