

AP<sup>®</sup> Higher  
Education



# AP<sup>®</sup>: A Foundation for Academic Success

# Faculty perspectives on AP®

---

“Students who have had AP typically can take more advanced courses earlier ... This enables them to participate in interesting internships earlier or do research in their senior year. They bring that information back to Duke and inform our curriculum based on what they learn.”

**Owen Astrachan**

Professor of the Practice of Computer Science  
Director of Undergraduate Studies  
Duke University

---

“AP not only immerses students more deeply in a subject, but it marks an experiential change, explicitly pointing them toward college and raising academics to a new level of seriousness too often absent from their social lives. AP courses accustom them to college-level labor, and admission offices favor AP as a sign that an applicant seeks a school’s best resources. Given the high remediation and dropout rates among first-year students at American colleges, along with disappointing scores on 12th-grade exams across disciplines given by the National Assessment of Educational Progress, we should encourage more AP enrollment.”

**Mark Bauerlein**

Professor, Department of English  
Emory University

---

“The AP Comparative Government and Politics course not only requires students to learn a great deal about the six core countries — China, Great Britain, Iran, Mexico, Nigeria and Russia — it also obliges them to master the analytic skills and the core concepts that are central to political science. I have been impressed by the rigorous nature of the AP Exams and the high level of thinking that they require. AP courses surpass many college courses in terms of the demands that they make on the students, and they do a terrific job of preparing students for success in college.”

**Raul L. Madrid**

Associate Professor, Department of Government  
University of Texas at Austin

## 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 that **AP students who earn credit and advanced placement for the corresponding introductory college course:**

- 1** Perform well in subsequent college courses in the discipline.
- 2** Are more likely to major in their AP subject or a related discipline.
- 3** Take more — not less — college course work in the discipline.
- 4** Are more likely to graduate within five years.
- 5** Can develop an interest in STEM subjects that leads to a STEM major in college.

**Sample:**

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

**Characteristics analyzed:**

Intermediate course GPA, college majors

**Control variables:**

SAT® scores

**Full report:**

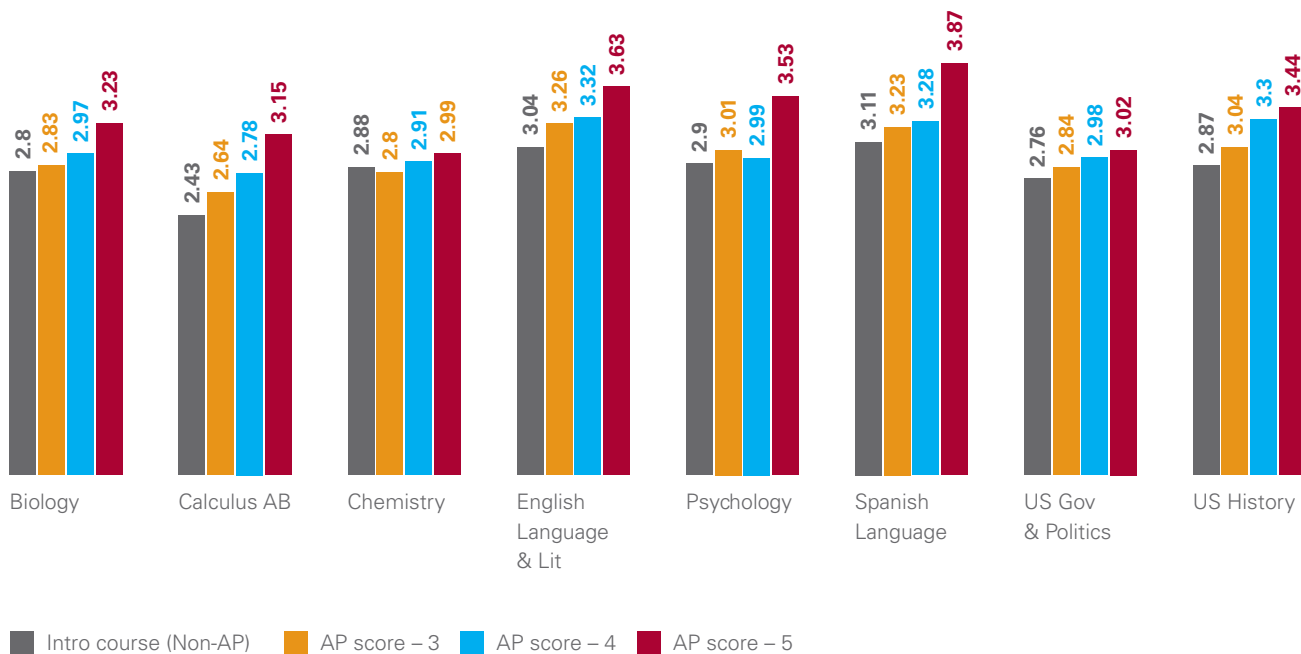
<http://bit.ly/WnOQBn>

# 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. They also earned degrees in less time than did the non-AP cohort.

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



Adapted from Morgan and Klaric, 2007

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

**Sample:**

40,000 students at 39 colleges

**Characteristics analyzed:**

College major

**Full report:**

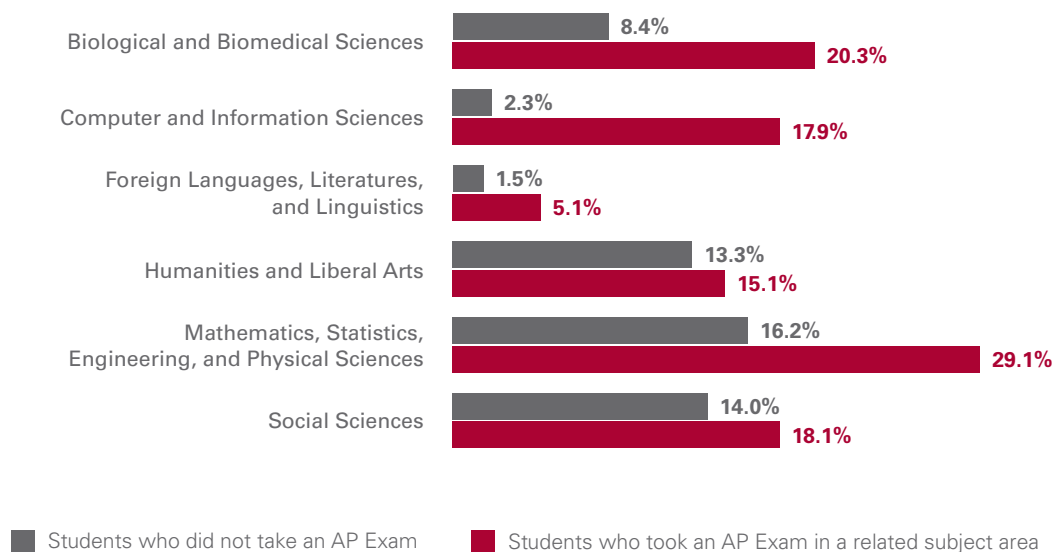
<http://bit.ly/YWbtTg>

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

**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. 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: College majors, by AP participation**



Adapted from Mattern, Shaw, and Ewing, 2011

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

**Sample:**

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

**Characteristics analyzed:**

College GPA, number of college credit hours

**Control variables:**

High school rank, SAT scores

**Full report:**

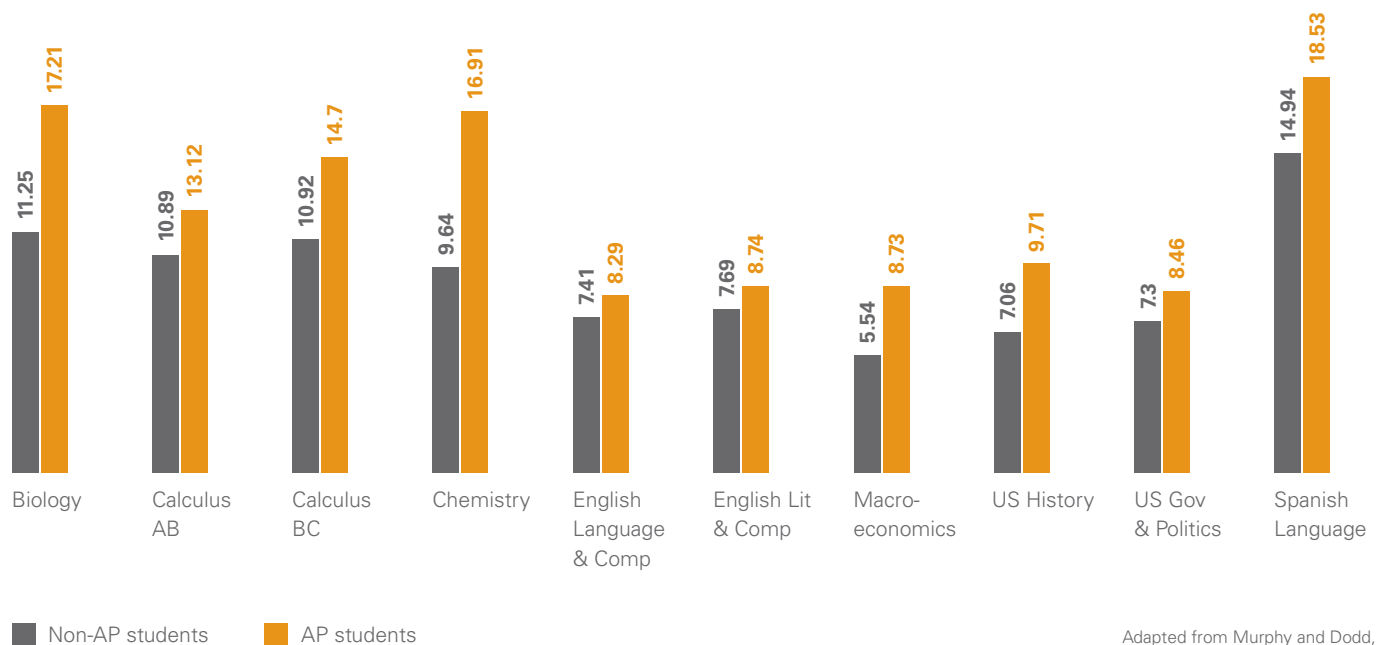
<http://bit.ly/13MGk11>

### 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, by AP participation**



Adapted from Murphy and Dodd, 2009

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

**Sample:**

67,000 students at Texas public colleges and universities

**Characteristics analyzed:**

College graduation rate

**Control variables:**

Eighth-grade math test scores, school-level characteristics

**Full report:**

<http://bit.ly/VRyzFK>

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

**Key finding**

A 2006 study<sup>4</sup> found that, even after controlling for prior academic achievement, student-level variables and school-level variables, 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.

**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

4. Chrys Dougherty, Lynn Mellor, and Shuling Jian, *The Relationship Between Advanced Placement and College Graduation* (National Center for Education Accountability, 2006).

**Sample:**

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

**Characteristics analyzed:**

Intermediate course GPA, college majors

**Full report:**

<http://bit.ly/WnQQBn>

# 5

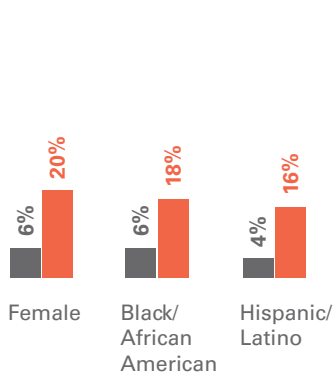
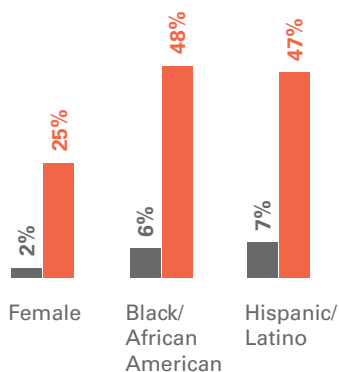
## AP can help students develop an interest in STEM subjects that leads to a STEM major in college.

**Key finding**

A 2007 study<sup>5</sup> highlighted the connection between participating in AP STEM subjects and majoring in STEM disciplines for underrepresented and female students. For example, the study showed that Hispanic/Latino students who took AP Biology were four times more likely to major in biology than Hispanic/Latino students who took the introductory biology course in college instead. Female students who took Physics C were about 12 times more likely to major in physics.

In 2007, the National Academies released a report<sup>6</sup> focused on “energizing and employing America for a brighter economic future.” The report included among its top recommendations a call for national investment in the training of many more AP math and science teachers. This recommendation is supported by research highlighting the strong benefits of expanding the reach of AP math, science and technology courses.

**Figure 5: Choice of major by AP participation**

**Biology****Physics C**

■ Non-AP students taking the intro course who chose major    ■ AP students who chose major

Adapted from Morgan and Klaric, 2007

5. Rick Morgan and John Klaric, *AP Students in College: An Analysis of Five-Year Academic Careers* (New York: The College Board, 2007).

6. National Academies, *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future* (Washington, DC: The National Academies Press, 2007).



## AP is evolving: The course and exam redesign

As part of our commitment to continually enhance alignment with current best practices in college-level learning, AP is evaluating and redesigning courses and exams, beginning with world languages, history and science subjects. The redesign process, built upon the current strengths of the program, is the result of a collaboration among college faculty, AP teachers, and learning and assessment specialists. Redesigned courses and exams support the development of the knowledge and skills students need to succeed in subsequent courses in the discipline at the college level.

AP is evaluating and redesigning courses and exams, beginning with world languages, history and science subjects.

“The process for creating the [redesigned AP Chemistry] course involved many iterations, with input from hundreds of educators at both the high school and college levels. The committee membership was sufficiently fluid to allow broad input and sufficiently stable to retain a coherent vision. The result is a consensus design that is informed by the current state of AP and college classrooms and takes a significant, yet manageable, step toward moving all AP classrooms toward the best of current practice.”

**David Yaron**

Associate Professor, Department of Chemistry  
Carnegie Mellon University

## AP course launch schedule

### Fall 2011

French Language and Culture  
German Language and Culture

### Fall 2012

Biology  
Latin  
Spanish Literature and Culture

### Fall 2013

Chemistry  
Spanish Language and Culture

### Fall 2014

Physics 1: Algebra-Based  
Physics 2: Algebra-Based  
United States History

### Fall 2015

Subjects will be announced  
in October 2013.

# Hallmarks of the redesigned courses and exams

---

- A greater emphasis on 21st-century skills, including critical thinking, inquiry, reasoning and communication.
- Curricula, modeled upon introductory college courses, that strike a balance between breadth of content coverage and depth of understanding.
- Standards informed by:
  - Recommendations of national disciplinary organizations;
  - Results of curriculum studies conducted at four-year institutions; and
  - Leading pedagogical and measurement practices.
- Detailed curriculum frameworks, which tie the concepts, themes and skills relevant within each discipline to a set of key learning objectives.
- Validation of the revised curriculum frameworks by faculty at dozens of leading institutions.
- Exams that tie each question to the evidence required to demonstrate student achievement of each specific learning objective.

## Establishing college-level curricula

### **AP course and exam development: Modeling college courses**

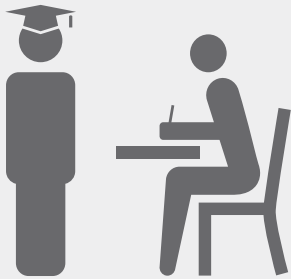
AP Development Committees, comprised of an equal number of college faculty and experienced secondary AP teachers from across the country, develop each AP course curriculum, determine the general content and ability level of each exam, determine requirements for course syllabi, and write and review exam questions.

As they draft AP curricula, committee members in each subject review the results of curriculum studies conducted at representative colleges. AP curriculum drafts are then reviewed by college faculty teaching the comparable course. These reviews help ensure that AP course content and skills are well aligned with parallel college courses.

College faculty help ensure that AP course content and skills are well aligned with parallel college courses.



College faculty establish standards and inform cut scores for AP Exams by administering portions of AP Exams to their own students.



## Setting standards for AP

### College comparability studies and standard settings: Defining “college level”

Definitions of the knowledge and skills required to earn scores of 1, 2, 3, 4 and 5 on an AP Exam are derived from standard settings and college comparability studies. These processes ensure that AP Exam outcomes align with college faculty expectations. Before the studies begin, committees of college faculty who teach the comparable college course develop detailed descriptions of the performance required to earn each score — these are called achievement level descriptors (ALDs).

- 1. Standard-setting studies:** A panel of 15 faculty and teachers reviews the ALDs and takes the AP Exam. The panel determines how many questions a student would need to answer correctly at each ALD. These raw scores become the cut scores for each AP Exam score.
- 2. College comparability studies:** College faculty at a range of institutions — public, private, liberal arts and research — administer portions of an AP Exam to students in the comparable college course; student AP scores are correlated to their final course grades.

The results of both studies establish the standards and inform the cut scores for the relevant AP Exam.

---

**A list of colleges recently participating in validity studies like these appears at the end of this booklet.**



## Essential AP resources

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

- 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. 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).

# Current AP Exams

---

## Arts

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

## English

English Language & Composition  
English Literature & Composition

## History & Social Science

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

## Math & Computer Science

Calculus AB  
Calculus BC  
Computer Science A  
Statistics

---

## Sciences

Biology  
Chemistry  
Environmental Science  
Physics B  
Physics C: Electricity & Magnetism  
Physics C: Mechanics

## World Languages & Cultures

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

# College faculty are involved in every aspect of AP

On an annual basis, more than 5,000 college faculty participate in all aspects of AP, from course and exam development to teacher professional development.

To learn more about how you can get involved in AP, visit [www.collegeboard.org/aphighered](http://www.collegeboard.org/aphighered).



## A sample of institutions that participated in recent AP activities

---

American University	Fordham University	Stanford University	University of North Carolina, Chapel Hill
Amherst College	Georgetown University	Stony Brook University	University of North Texas
Arizona State University	George Washington University	SUNY Geneseo	University of Notre Dame
Auburn University	Georgia Institute of Technology	Swarthmore College	University of Oklahoma
Bard College	Gettysburg College	Syracuse University	University of Pennsylvania
Barnard College	Grinnell College	Texas Christian University	University of Pittsburgh
Baylor University	Hamilton College	Trinity College	University of Rochester
Boston College	Harvey Mudd College	Trinity University	University of San Diego
Boston University	Haverford College	Tufts University	University of South Carolina
Bowdoin College	Indiana University	Union College	University of South Florida
Brandeis University	Iowa State University	University of Alabama	University of Southern California
Brigham Young University	James Madison University	University of Arkansas Fayetteville	University of Tennessee, Knoxville
Bucknell University	Johns Hopkins University	University of British Columbia	University of Texas at Austin
California Institute of Technology	Kalamazoo College	University of California, Davis	University of Texas at Dallas
California Polytechnic State University	Kenyon College	University of California, Irvine	University of Tulsa
California State University, Fresno	Lehigh University	University of California, Los Angeles	University of Vermont
California State University, Long Beach	Lewis & Clark College	University of California, Riverside	University of Virginia
Carleton College	Louisiana State University	University of California, San Diego	University of Wisconsin - Madison
Carnegie Mellon University	Loyola University Chicago	University of California, Santa Barbara	U.S. Military Academy
Case Western Reserve University	Marquette University	University of Chicago	U.S. Naval Academy
Chapman University	Massachusetts Institute of Technology	University of Cincinnati	Utah State University
Claremont McKenna College	Miami University of Ohio	University of Colorado	Vanderbilt University
Clemson University	Michigan State University	University of Connecticut	Vassar College
Colby College	Middlebury College	University of Florida	Villanova University
Colgate University	Mount Holyoke College	University of Georgia	Virginia Tech
College of Charleston	Muhlenberg College	University of Illinois at Urbana-Champaign	Wake Forest University
College of New Jersey	New York University	University of Iowa	Washington and Lee University
College of the Holy Cross	Oberlin College	University of Kentucky	Washington State University
College of William & Mary	Ohio State University	University of Maryland Washington	Washington University in St. Louis
Colorado College	Pennsylvania State University	University of Maryland	Wellesley College
Connecticut College	Pepperdine University	University of Massachusetts - Amherst	Wesleyan University
Cooper Union	Purdue University	University of Miami	Westminster College
Cornell University	Reed College	University of Minnesota	Wheaton College
Dartmouth College	Rensselaer Polytechnic Institute	University of Minnesota - Twin Cities	Whitman College
Davidson College	Rice University	University of New Mexico	Williams College
Denison University	Rochester Institute of Technology		Worcester Polytechnic Institute
Dickinson College	Rutgers, the State University of New Jersey		Yale University
Duke University	Savannah College of Art and Design		
Emory University	Skidmore College		
Florida International University	Smith College		
Florida State University	St. Mary's College of Maryland		





### **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.collegeboard.org/aphighered](http://www.collegeboard.org/aphighered) 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).