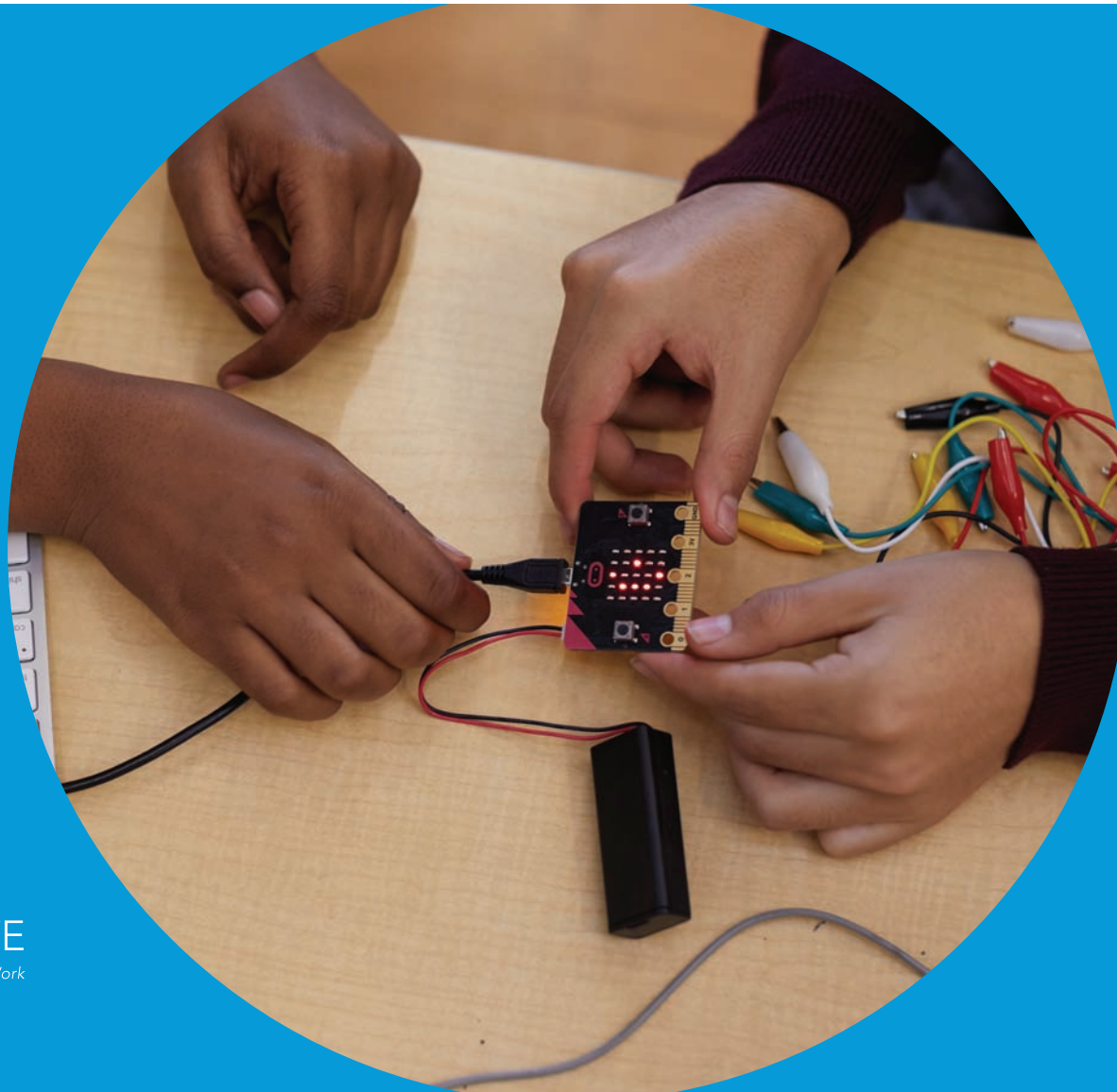# **Advanced Placement**®
# and Career and Technical Education: Working Together

The Advanced Placement (AP®) Program prepares students for success in college and career   but more importantly, in life. And when students participate in career and technical education (CTE) in addition to AP, they're setting themselves up for a successful future.

AP and CTE courses can and should work in tandem to support career readiness by encouraging the development of the academic knowledge and technical skills that are, together, increasingly important to students' overall employability. AP and CTE courses complement and supplement each other by letting students focus their high school coursework and training on career areas they aspire to work in. For too long, "college-ready" and "career-ready" coursework and experiences have been separate in our schools; the alignment of AP and CTE courses shows this divide only limits learners' options.

At the same time, CTE students are increasingly pursuing postsecondary education and are just as likely to enroll in college as their non-CTE peers.

Georgetown's Center on Education and the Workforce projects:

65% of all jobs in the economy will require postsecondary education and training beyond high school
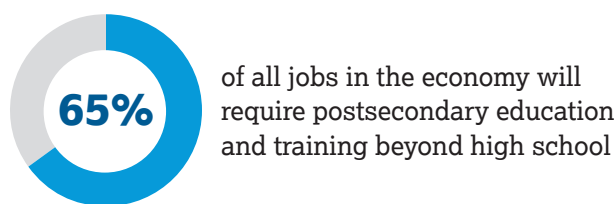
55 million job openings

24 million from newly created jobs
31 million due to baby boomer retirements.

Statistic reference projections through 2020.

When students incorporate AP courses into their CTE programs of study, they're engaging in challenging academic coursework that aligns with and supports their post-high school plans.

The AP Program teamed up with Advance CTE and CTE directors from multiple states to consider how AP courses connect to the 16 Career Clusters listed in the National Career Clusters Framework®. The connections, outlined in the following pages, are a starting point for further discussion and innovative thinking at the school and district levels to align AP coursework with state- and locally developed CTE programs of study. The table below lists AP courses that could be embedded into a program of study, along with additional recommended courses.

GUIDING QUESTIONS

How can your state, district, or school do the following to promote rigorous coursework in high school:

- Communicate to students and families the connections between AP and CTE courses and the importance of rigorous coursework to success in all postsecondary opportunities?

- Remove barriers to ensure all students have access to both AP and CTE coursework?

- Support all students to succeed in both AP and CTE courses?

- Give teachers the necessary supports, professional development, and certifications to teach both AP and CTE courses?

- Help students identify opportunities to take both AP and CTE courses during their academic planning?

EXAMPLES

In Maryland, the State Department of Education prepares students for college and career by developing certain CTE programs of study that are designed to leverage AP offerings in high schools. As the department develops specific CTE programs of study, it examines AP curricula to see if they align with the program's intent. If they do, they're infused into the program as one of the credits.

Maryland's CTE pathways include AP courses that students can use to complete their CTE program.

For example:

- Pre-Engineering—AP Computer Science Principles
- Computer Science—AP Computer Science Principles and AP Computer Science A
- Business, Management, and Finance— AP Microeconomics and AP Macroeconomics

Students can explore subjects that interest them by digging deeper into content and tapping into their creativity and problem-solving skills. Building these skills along with academic confidence powerfully complements CTE programs of study.

The Tennessee Department of Education also has incorporated AP classes into its CTE programs of study.

For example:

- Environmental and Natural Resource Management— AP Environmental Science
- Architectural and Engineering Design— AP Calculus and AP Physics
- Digital Arts and Design— AP 2-D Art and Design
- Audio/Visual Production— AP English Language and Composition
- Accounting—AP Statistics
- Public Management and Administration— AP United States Government and Politics
- Coding—AP Computer Science Principles (CSP) and AP Computer Science A
- Web Design—AP CSP
- Cybersecurity—AP CSP
- Engineering—AP CSP or AP Physics
- Technology—AP CSP, AP Computer Science A, or AP Physics
- Prelaw—AP United States Government and Politics
- Advanced STEM Applications—AP Computer Science Principles, AP Computer Science A, AP Calculus AB/BC, AP Biology, AP Chemistry, or AP Physics

> "It is a false premise to suggest you're either an academic or career technical student. That is why we embed Advanced Placement courses into our career pathways. Students need to develop strong academic foundations regardless of their career pathway, so we cannot educate them in silos."
>
> —Dr. Lazaro Lopez, Associate Superintendent for Teaching and Learning, High School District 214, Arlington Heights, Illinois

> This table can serve as a guide. Courses listed in this table are only recommended coursework and should be individualized to meet each student's educational and career goals.

CAREER CLUSTER	AP COURSES AND EXAMS	
Agriculture, Food, and Natural Resources Agribusiness Systems Animal Systems Environmental Service Systems Food Products & Processing Systems Natural Resources Systems Plant Systems Power, Structural, & Technical Systems	**POTENTIAL TO BE EMBEDDED INTO PROGRAM OF STUDY** Environmental Science Macroeconomics Microeconomics Physics C: Mechanics	**RECOMMENDED[2]** Biology Capstone (Seminar and Research)[3] Chemistry Computer Science Principles Human Geography Physics 1 Statistics World Languages and Cultures[4]
Architecture and Construction Construction Design/Preconstruction Maintenance/Operations	**POTENTIAL TO BE EMBEDDED INTO PROGRAM OF STUDY** Physics 1 and 2 Physics C: Electricity and Magnetism Physics C: Mechanics Statistics	**RECOMMENDED** Art History Calculus AB/BC Capstone (Seminar and Research) Computer Science Principles Drawing Environmental Science Human Geography Macroeconomics Microeconomics 2-D Art and Design 3-D Art and Design
Arts, A/V Technology, and Communications A/V Technology and Film Journalism and Broadcasting Performing Arts Printing Technology Telecommunications Visual Arts	**POTENTIAL TO BE EMBEDDED INTO PROGRAM OF STUDY** Drawing Physics 1 and 2 Physics C: Electricity & Magnetism 2-D Art and Design 3-D Art and Design	**RECOMMENDED** Art History Capstone (Seminar and Research) Computer Science A Computer Science Principles English Language and Composition Music Theory Statistics World Languages and Cultures
Business Management and Administration Administrative Support Business Information Management General Management Human Resources Management Operations Management	**POTENTIAL TO BE EMBEDDED INTO PROGRAM OF STUDY** Macroeconomics Microeconomics Statistics	**RECOMMENDED** Calculus AB Capstone (Seminar and Research) Comparative Government and Politics Computer Science A Computer Science Principles English Language and Composition United States Government and Politics World Languages and Cultures
Education and Training Administration & Administrative Support Professional Support Services Teaching/Training	**POTENTIAL TO BE EMBEDDED INTO PROGRAM OF STUDY** Psychology Statistics	**RECOMMENDED** Capstone (Seminar and Research) (For Teaching/Training, it depends on areas of focus) Computer Science Principles English Language and Composition

CAREER CLUSTER	AP COURSES AND EXAMS	
Finance Accounting Banking Services Business Finance Insurance Securities & Investments	**POTENTIAL TO BE EMBEDDED INTO PROGRAM OF STUDY** Macroeconomics Microeconomics Statistics	**RECOMMENDED** Calculus AB Capstone (Seminar and Research) Computer Science A Computer Science Principles English Language and Composition World Languages and Cultures
Government and Public Administration Foreign Service Governance National Security Planning Public Management & Administration Regulation Revenue & Taxation	**POTENTIAL TO BE EMBEDDED INTO PROGRAM OF STUDY** Comparative Government and Politics Macroeconomics Microeconomics Statistics United States Government and Politics World History	**RECOMMENDED** Capstone (Seminar and Research) Computer Science Principles English Language and Composition European History Human Geography Statistics United States History World Languages and Cultures
Health Science Biotechnology Research & Development Diagnostic Services Health Informatics Support Services Therapeutic Services	**POTENTIAL TO BE EMBEDDED INTO PROGRAM OF STUDY** Biology Psychology	**RECOMMENDED** Calculus AB Capstone (Seminar and Research) Chemistry Computer Science Principles Environmental Science Statistics World Languages and Cultures
Hospitality and Tourism Lodging Recreation, Amusements & Attractions Restaurants & Food/Beverage Services Travel & Tourism	**POTENTIAL TO BE EMBEDDED INTO PROGRAM OF STUDY** Macroeconomics Microeconomics	**RECOMMENDED** Biology Capstone (Seminar and Research) Chemistry Environmental Science Physics 1 and 2 Statistics World Languages and Cultures
Human Services Consumer Services Counseling & Mental Health Services Early Childhood Development & Services Family & Community Services Personal Care Services	**POTENTIAL TO BE EMBEDDED INTO PROGRAM OF STUDY** Psychology	**RECOMMENDED** Biology Capstone (Seminar and Research) Computer Science Principles English Language and Composition Environmental Science Macroeconomics Microeconomics Statistics World Languages and Cultures
Information Technology Information Support & Services Network Systems Programming & Software Development Web & Digital Communications	**POTENTIAL TO BE EMBEDDED INTO PROGRAM OF STUDY** Computer Science A Computer Science Principles Physics 1 and 2 Physics C: Mechanics Physics C: Electricity and Magnetism	**RECOMMENDED** Calculus AB/BC Capstone (Seminar and Research) Chemistry English Language and Composition Statistics World Languages and Cultures 2-D Art and Design

CAREER CLUSTER	AP COURSES AND EXAMS	
Law, Public Safety, Corrections and Security Correction Services Emergency & Fire Management Services Law Enforcement Services Legal Services Security & Protective Services	**POTENTIAL TO BE EMBEDDED INTO PROGRAM OF STUDY** Comparative Government and Politics Psychology United States Government and Politics	**RECOMMENDED** Capstone (Seminar and Research) Computer Science Principles English Language and Composition Statistics World Languages and Cultures
Manufacturing Production Manufacturing Production Process Development Maintenance, Installation & Repair Quality Assurance Logistics & Inventory Control Health, Safety & Environmental Assurance	**POTENTIAL TO BE EMBEDDED INTO PROGRAM OF STUDY** Computer Science Principles Physics 1 and 2 Physics C: Electricity and Magnetism Physics C: Mechanics Statistics	**RECOMMENDED** Biology Calculus AB/BC Capstone (Seminar and Research) Chemistry English Language and Composition Environmental Science Human Geography Macroeconomics Microeconomics World Languages and Cultures
Marketing Marketing Communications Marketing Management Marketing Research Merchandising Professional Sales	**POTENTIAL TO BE EMBEDDED INTO PROGRAM OF STUDY** Macroeconomics Microeconomics Statistics	**RECOMMENDED** Calculus AB Capstone (Seminar and Research) Computer Science Principles Drawing English Language and Composition Psychology World Languages and Cultures 2-D Art and Design
Science, Technology, Engineering and Mathematics (STEM) Engineering & Technology Science & Math	**POTENTIAL TO BE EMBEDDED INTO PROGRAM OF STUDY** Calculus AB/BC Computer Science A Computer Science Principles Environmental Science Physics 1 and 2 Physics C: Electricity and Magnetism Physics C: Mechanics Statistics	**RECOMMENDED** Biology Calculus AB/BC Capstone (Seminar and Research) Chemistry

CAREER CLUSTER	AP COURSES AND EXAMS	

Transportation, Distribution and Logistics
 	
Facility & Mobile Equipment Maintenance
Health, Safety,
& Environmental Management
Logistics Planning & Management Services
Sales & Service
Transportation Operations
Transportation Systems/Infrastructure
  Planning, Management, & Regulation
Warehousing & Distribution
  Center Operations
	POTENTIAL TO BE EMBEDDED INTO PROGRAM OF STUDY
	Macroeconomics
	Microeconomics
	Physics 1
	Physics C: Mechanics
	Statistics
		RECOMMENDED
		Capstone (Seminar and Research)
		Computer Science A
		Computer Science Principles
		English Language and Composition
		Environmental Science
		Human Geography
		World Languages and Cultures

[1] "Potential to be Embedded into Program of Study" means these AP courses and exams could be included in the sequence of academic and technical content that address both academic and technical knowledge and skills that are aligned to industry needs.

[2] "Recommended" means these AP courses and exams may augment or support a program of study, and a student's post-high-school plans, but may not be appropriate to be embedded into a state- or locally developed Program of Study.

[3] AP Capstone is a diploma program based on two yearlong AP courses: AP Seminar and AP Research. These courses use an interdisciplinary approach to develop the critical thinking, research, collaboration, time management, and presentation skills students need after high school.

[4] Eight AP courses and exams comprise the World Languages and Cultures category: AP Chinese Language and Culture, AP French Language and Culture, AP German Language and Culture, AP Italian Language and Culture, AP Japanese Language and Culture, AP Latin, AP Spanish Language and Culture, and AP Spanish Literature and Culture.

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