

the condition of education 2004



INDICATOR 22

Student Characteristics in Science and Mathematics Coursetaking

The indicator and corresponding tables are taken directly from *The Condition of Education 2004*. Therefore, the page numbers may not be sequential.

Additional information about the survey data and supplementary notes can be found in the full report. For a copy of *The Condition of Education 2004* visit the NCES web site (<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2004077>) or contact ED PUBs at 1-877-4ED-PUBS.

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Coursetaking and Standards

Student Characteristics in Science and Mathematics Coursetaking

Asian/Pacific Islander high school graduates and private school graduates complete advanced levels of science and mathematics coursework at higher rates than their peers.

Trends in coursetaking since 1982 indicate that the proportions of high school students completing advanced academic courses in science and mathematics have increased (*indicator 21*). Unlike measures of total course credits completed in high school, these trends show changes in the academic level of courses completed. These trends, however, do not reveal which students are taking academically challenging courses. This indicator highlights differences among high school graduates in 2000 who completed advanced courses in science and mathematics.

Among 2000 graduates, females were more likely to have completed some advanced science coursework than males. Within the top two levels of advanced science coursetaking, however, the rates at which males and females completed advanced courses were not significantly different from each other (see supplemental table 22-1). Also, the rates at which males and females completed some advanced mathematics courses were not significantly different from each other, but females completed level II advanced academic mathematics courses (i.e., precalculus or an introduction to analysis) at higher rates than males (see supplemental table 22-2).

Asian/Pacific Islanders were more likely than graduates of any other race/ethnicity to have completed advanced science and mathematics courses. Whites were more likely to have completed advanced mathematics courses than Blacks, Hispanics, and American Indians. No measurable differences were found between the rates at which Whites, Blacks, and Hispanics completed advanced science courses.

Private school graduates were more likely than public school graduates to have completed advanced courses in science and mathematics. High school graduates who had completed the Core curriculum or higher were more likely to have completed advanced science and mathematics courses than those who had not completed this curriculum. Among those who had completed the curriculum, however, 20 percent had not completed advanced science courses and 40 percent had not completed advanced mathematics courses.

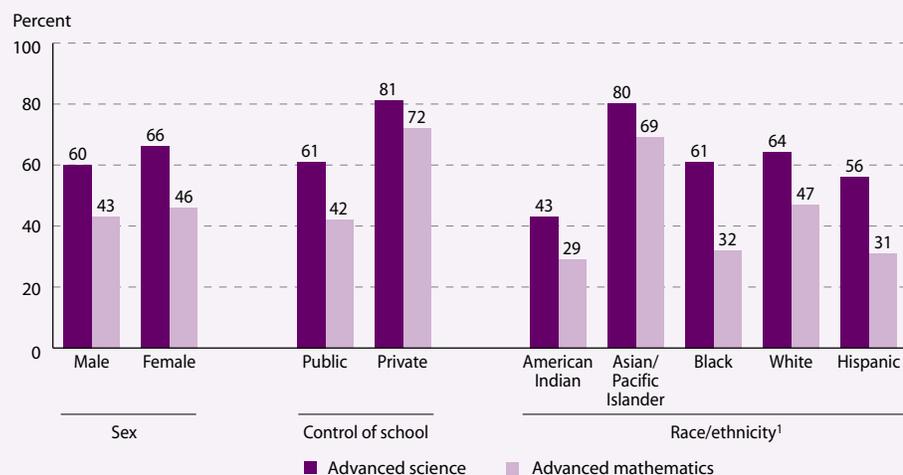
No differences were detected between the rates at which graduates from small schools (enrollment less than 300), moderate-sized schools (enrollment of 300–999), and large schools (enrollment more than 999) completed advanced courses in science and mathematics.

¹American Indian includes Alaska Native, Black includes African American, Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Racial categories exclude Hispanic origin.

NOTE: See supplemental note 6 for details on the science and mathematics coursetaking levels. To meet the requirements of the Core curriculum, students must complete at least 4 years of English and 3 years each of science, mathematics, and social studies. See supplemental note 4 for more information on the National Assessment of Educational Progress (NAEP).

SOURCE: U.S. Department of Education, NCES, National Assessment of Educational Progress (NAEP), 2000 High School Transcript Study (HSTS).

DIFFERENCES IN COURSETAKING: Percentage of spring 2000 high school graduates who had completed advanced academic courses in science and mathematics, by selected student and school characteristics



FOR MORE INFORMATION:
 Supplemental Notes 4, 6
 Supplemental Tables 22-1,
 22-2
 NCE 2004-455

Student Characteristics in Science and Mathematics Coursetaking

Table 22-1. Percentage distribution of spring 2000 high school graduates by highest level of science courses completed, by student and school characteristics

Student or school characteristic	No science ¹	Low academic level				Advanced academic level			
		Total	Primary physical science	Secondary physical science and basic biology	General biology	Total	Chemistry I or physics I	Chemistry I or physics I and advanced biology	Chemistry II or physics II or advanced biology
Total	0.7	8.7	2.8	5.9	27.5	63.1	30.5	14.8	17.9
Sex									
Male	0.9	10.2	3.4	6.7	28.6	60.3	27.5	15.5	17.4
Female	0.5	7.4	2.2	5.2	26.5	65.6	33.1	14.2	18.3
Race/ethnicity ²									
American Indian	0.9!	12.3	3.2!	9.1	43.7	43.1	30.5	8.2!	4.4!
Asian/Pacific Islander	0.4!	8.3	4.0!	4.3	11.7	79.7	21.4	24.5	33.8
Black	0.7!	9.0	2.7	6.3!	29.5	60.8	34.0	13.1	13.7
White	0.6	8.0	2.3	5.7	27.7	63.7	30.4	15.1	18.2
Hispanic	0.9!	12.2	5.2!	7.0	30.7	56.2	30.4	11.1	14.6
Curriculum ³									
Core or higher	0.2!	2.7	0.5!	2.2	16.8	80.3	35.7	21.6	23.0
Less than Core	1.3	17.2	6.1	11.2	42.6	38.8	23.1	5.1	10.7
Control of school									
Public	0.7	9.2	3.0	6.1	28.6	61.5	29.8	13.8	18.0
Private	#	3.9!	0.1!	3.9!	15.5!	80.6	38.1	25.7	16.8
School enrollment									
Less than 300	#	4.8!	1.2!	3.6!	33.0	62.2	35.5	17.5	9.2!
300–999	0.8!	8.4	3.6	4.8	27.9	63.0	30.7	14.5	17.8
1,000 or more	0.7	9.3	2.5	6.8	26.8	63.2	29.8	14.6	18.8

#Rounds to zero.

!Interpret with caution (estimates are unstable).

¹Students in this category may have taken some science courses, but these courses are not defined as science courses according to the classification used in this analysis.

²American Indian includes Alaska Native, Black includes African American, Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Racial categories exclude Hispanic origin.

³To meet the requirements of the Core curriculum, students must complete at least 4 years of English and 3 years each of science, mathematics, and social studies.

NOTE: The placement of graduates in the various levels of science courses is determined by the completion of at least one course at that level. Graduates who have completed coursework at more than one level (e.g., primary physical science and secondary physical science and basic biology) were counted according to the highest level course completed. Graduates may have completed advanced levels of courses without having taken courses at lower levels. See *supplemental note 6* for more details on these levels. See *supplemental note 4* for more information on the National Assessment of Educational Progress (NAEP). Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, NCES, National Assessment of Educational Progress (NAEP), 2000 High School Transcript Study (HSTS).

Student Characteristics in Science and Mathematics Coursetaking

Table 22-2. Percentage distribution of spring 2000 high school graduates by highest level of mathematics courses completed, by student and school characteristics

Student or school characteristic	No mathematics ¹	Non-academic	Low academic	Middle academic			Advanced academic			
				Total	Level I	Level II	Total	Level I	Level II	Level III
Total	0.8	2.5	4.1	48.0	18.6	29.4	44.6	14.1	18.0	12.5
Sex										
Male	1.2	3.1	4.7	48.4	20.8	27.6	42.7	13.5	16.1	13.1
Female	0.6	1.9	3.5	47.6	16.6	31.0	46.4	14.7	19.7	11.9
Race/ethnicity ²										
American Indian	2.3	3.9!	4.7!	60.0	27.3	32.7	29.2	15.4	9.8	3.9!
Asian/Pacific Islander	0.5	1.0!	0.9!	29.0	10.4	18.7	68.6	9.9	25.1	33.5
Black	1.4	2.3!	4.3!	59.6	22.0	37.6	32.4	14.0	13.3	5.1
White	0.7	2.4	4.3	45.3	17.5	27.7	47.4	15.2	18.8	13.4
Hispanic	1.1	3.4!	3.9!	60.4	24.4	36.1	31.1	9.5	15.2	6.4
Curriculum ³										
Core or higher	0.3	0.6!	1.8!	37.8	8.7	29.1	59.6	16.9	24.6	18.1
Less than Core	1.6	5.1	7.4	62.5	32.6	29.9	23.4	10.2	8.6	4.6
Control of school										
Public	0.9	2.7	4.5	49.9	20.0	30.0	42.0	14.0	16.1	12.0
Private	#	0.1!	0.1!	27.3	3.5!	23.8	72.5	15.5	38.7	18.3
School enrollment										
Less than 300	0.1	1.6!	2.4!	51.4	23.7	27.7	44.4	20.9	11.3!	12.2
300–999	0.8!	1.5!	5.5	45.9	17.1	28.8	46.4	14.4	20.0	12.0
1,000 or more	0.9	3.1	3.5!	48.8	18.9	29.9	43.7	13.3	17.6	12.8

#Rounds to zero.

!Interpret with caution (estimates are unstable).

¹Students in this category may have taken some mathematics courses, but these courses are not defined as mathematics courses according to the classification used in this analysis.

²American Indian includes Alaska Native, Black includes African American, Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Racial categories exclude Hispanic origin.

³To meet the requirements of the Core curriculum, students must complete at least 4 years of English and 3 years each of mathematics, science, and social studies.

NOTE: The distribution of graduates among the various levels of mathematics courses was determined by the level of the most academically advanced course they completed. Graduates may have completed advanced levels of courses without having taken courses at lower levels. See *supplemental note 6* for more details on these levels. See *supplemental note 4* for more information on the National Assessment of Educational Progress (NAEP).

Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, NCES, National Assessment of Educational Progress (NAEP), 2000 High School Transcript Study (HSTS).

Student Characteristics in Science and Mathematics Coursetaking

Table S22. Standard errors for the percentage of spring 2000 high school graduates who had completed advanced academic courses in science and mathematics, by selected student and school characteristics

Student or school characteristic	Advanced academic science	Advanced academic mathematics
Sex		
Male	1.53	1.45
Female	1.77	1.55
Control of school		
Public	1.53	1.31
Private	8.41	7.80
Race/ethnicity		
American Indian	3.34	4.01
Asian/Pacific Islander	2.00	2.76
Black	2.88	2.16
White	1.69	1.47
Hispanic	4.81	2.50

SOURCE: U.S. Department of Education, NCES, National Assessment of Educational Progress (NAEP), 2000 High School Transcript Study (HSTS).

Student Characteristics in Science and Mathematics Coursetaking

Table S22-1. Standard errors for the percentage distribution of spring 2000 high school graduates by highest level of science courses completed, by student and school characteristics

Student or school characteristic	No science	Low academic level				Advanced academic level			
		Total	Primary physical science	Secondary physical science and basic biology	General biology	Total	Chemistry I or physics I	Chemistry I and physics I	Chemistry II or physics II or advanced biology
Total	0.11	0.93	0.48	0.79	1.46	1.54	1.05	1.11	1.43
Sex									
Male	0.15	1.04	0.58	0.87	1.56	1.53	1.02	1.13	1.50
Female	0.10	0.92	0.43	0.78	1.63	1.77	1.26	1.22	1.49
Race/ethnicity									
American Indian	0.54	3.10	1.61	2.55	4.16	3.34	4.02	2.91	1.85
Asian/Pacific Islander	0.13	1.80	1.61	1.20	1.31	2.00	1.95	1.60	2.56
Black	0.25	2.10	0.76	1.95	3.04	2.88	2.23	1.66	2.23
White	0.14	0.95	0.46	0.81	1.65	1.69	1.18	1.31	1.72
Hispanic	0.30	2.51	1.71	1.24	3.02	4.81	2.60	1.34	3.57
Curriculum									
Core or higher	0.07	0.59	0.19	0.55	1.57	1.72	1.48	1.62	1.58
Less than Core	0.24	1.71	1.07	1.42	2.32	2.03	1.54	0.50	1.64
Control of school									
Public	0.13	1.03	0.53	0.87	1.54	1.53	1.00	1.06	1.52
Private	#	2.57	0.07	2.55	8.93	8.41	4.70	7.69	2.84
School enrollment									
Less than 300	#	1.75	0.53	1.76	4.26	4.61	4.80	3.50	3.40
300 - 999	0.29	1.64	0.98	1.04	2.84	2.95	2.22	2.06	3.24
1,000 or more	0.11	1.27	0.63	1.14	1.93	1.81	1.33	1.34	1.71

#Rounds to zero.

SOURCE: U.S. Department of Education, NCES, National Assessment of Educational Progress (NAEP), 2000 High School Transcript Study (HSTS).

Student Characteristics in Science and Mathematics Coursetaking

Table S22-2. Standard errors for the percentage distribution of spring 2000 high school graduates by highest level of mathematics courses completed, by student and school characteristics

Student or school characteristic	No mathematics	Non-academic	Low academic	Middle academic			Advanced academic			
				Total	Level I	Level II	Total	Level I	Level II	Level III
Total	0.11	0.30	0.43	1.17	0.83	1.01	1.31	0.96	0.99	0.74
Sex										
Male	0.18	0.37	0.52	1.24	0.95	1.03	1.45	0.91	0.90	0.80
Female	0.08	0.30	0.44	1.44	0.87	1.19	1.55	1.12	1.26	0.78
Race/ethnicity										
American Indian	1.02	1.89	1.82	4.52	4.62	4.89	4.01	3.18	2.75	1.62
Asian/Pacific Islander	0.20	0.40	0.38	2.58	1.38	1.76	2.76	1.29	3.45	5.17
Black	0.32	0.42	0.81	2.02	1.84	1.92	2.16	1.80	1.24	0.59
White	0.11	0.35	0.51	1.31	0.77	1.11	1.47	1.19	1.28	0.77
Hispanic	0.26	0.62	0.70	2.01	3.35	2.75	2.50	1.41	2.30	0.92
Curriculum										
Core or higher	0.09	0.16	0.36	1.35	0.73	1.08	1.49	1.24	1.28	1.01
Less than Core	0.20	0.63	0.79	1.47	1.34	1.36	1.57	0.98	0.92	0.53
Control of school										
Public	0.12	0.33	0.45	1.14	0.89	1.02	1.31	0.97	0.94	0.72
Private	#	0.04	0.12	7.82	1.46	7.63	7.80	3.79	3.66	4.04
School enrollment										
Less than 300	0.13	0.53	0.92	4.74	3.48	3.00	4.83	4.24	3.44	2.34
300–999	0.15	0.49	0.90	2.07	1.79	2.16	2.30	1.94	2.03	1.09
1,000 or more	0.17	0.39	0.47	1.46	0.98	1.36	1.70	0.89	0.97	0.98

#Rounds to zero.

SOURCE: U.S. Department of Education, NCES, National Assessment of Educational Progress (NAEP), 2000 High School Transcript Study (HSTS).