



# WEST VIRGINIA

## Sciences & Life Sciences Achievement

### STUDENT ACHIEVEMENT

NAEP Grade 8	WV	U.S. Avg.	State Rank
Science Average, 2005	147.0	147.1	26
Science, 2005 (% at or above "proficient")	23.4%	27.3%	31
Life Sciences Average, 2005	147.7	148.2	27

ACT	WV	U.S. Avg.	State Rank
Science Average, 2008	20.5	20.8	36
Biology, 2008 (% of students ready for college level)	23%	28%	40

AP	WV	U.S. Avg.	State Rank
Science Scores, 2008 (% with a score of 3 or higher)	37.6%	55.4%	48
Science Exams, 2008 (Exams as % of all H.S. grads)	6.0%	10.5%	39
Biology Scores, 2008 (% with a score of 3 or higher)	31.5%	49.8%	47
Biology Exams, 2008 (Exams as % of all H.S. grads)	2.8%	4.6%	37

SCIENCE TEACHER QUALITY and PROFESSIONAL DEVELOPMENT	WV	U.S. Avg.	State Rank
Science Teachers with Major in Assigned Field, 2003–04 (% , Grades 7–12)	72%	77%	33
Science Teachers Certified, 2006 (% , Grades 7–8)	96%	N/A%	7
Biology Teachers Certified, 2006 (% , Grades 9–12)	95%	88%	13

**Note:** NAEP = National Assessment of Educational Progress, AP = Advanced Placement  
N/A = Data not available.

## Examples of Bioscience Education Activities

### Teacher Preparation and Professional Development

The **Underwood-Smith Teacher Scholarship Program** provides up to \$5,000 for each academic year of higher education in preparation for becoming a teacher. Recipients are required to fulfill a 2-year teaching commitment for each year of scholarship receipt within 10 years of completing the preparation program. Priority is

## WV STATE SCIENCE STANDARDS & REQUIREMENTS

### STANDARDS PROFILE

- Most recent update of K-12 Science Standards: **2008**
- Next scheduled update: **2009**
- Research scientists provided input in development of standards
- Science standards specifically mention applied laboratory or other tools for biotechnology or biosciences: The Biology Content standards state:
  - The course will provide an in-depth study in the chemical nature of life, cellular functions, microbiology, ecology, **biotechnology**, zoology, botany, with application emphasis.

### BIOSCIENCE-RELATED GRADUATION REQUIREMENTS:

One unit of life sciences is required



given to the most highly qualified applicants who intend to pursue teaching careers in areas of critical need and shortage—who are required to fulfill 1 year of teaching for each year of scholarship—and those who show interest in pursuing teaching careers in mathematics and science and who are underrepresented in those fields.

The **West Virginia Engineering, Science and Technology Scholarship Program** is a state-funded student aid program designed to enable and encourage academically talented individuals to pursue careers in the stated fields. Scholarships, not to exceed \$3,000 per academic year, are awarded on the basis of academic qualifications and interest in the fields of engineering, science, and technology. The objective is for a recipient to obtain a degree or certificate in the specified fields and to commit to the pursuit of a career in West Virginia.

The **National Aeronautics and Space Administration (NASA) Independent Verification and Validation (IV&V) Facility Educator Resource Center (ERC)**, with support from Fairmont State University, provides in-service, pre-service, and informal educators with an easily accessible source of materials that reflect NASA's current research and technology. These materials relate to curriculum areas such as Human Exploration, Development of Space, Earth Science, Space Science, Aerospace Technology, and Biological and Physical Research.

### **Experiential Learning and Outreach**

The **West Virginia University (WVU) Summer Experience Program** is designed to encourage minority and female students to participate in a science or engineering field by providing intensive instruction for 80 to 100 students each summer in Morgantown.

**WVU's WVNano Summer Science Camp Program** involves middle school students in demonstrations, hands-on projects, presentations, and tours of WVU research facilities.

The West Virginia **Governor's School for Mathematics and Science (GSMS)** is a summer residential program providing academic enrichment in the areas of science and math for current 7th and 8th graders living in and attending school in West Virginia.

**Toyota's Science on Wheels** program, a partnership of Toyota Inc. and Marshall University's (MU's) College of Education and Human Services, provides innovative science lessons for elementary students in area schools via the Science on Wheels van.

The **West Liberty State College Science-Math-Art-Research-Technology (SMART) Center** provides customized, hands-on, standards-based field trips for K-12 students. SMART also offers summer science camps in a variety of subject areas.

The **Health Sciences and Technology Academy**, which is offered at both WVU and MU, seeks to encourage minority and underrepresented students and students from rural areas who have an interest in math and science to pursue careers in health care.



## Basic Skills Achievement and Other Summary Metrics

### STUDENT ACHIEVEMENT

NAEP Grade 8	WV	U.S. Avg.	State Rank
Math Average, 2007	270.1	280.2	46
Math, 2007 (% at or above "proficient")	18.5%	31.0%	47
Reading Average, 2007	255.0	261.0	42
Reading, 2007 (% at or above "proficient")	22.9%	29.2%	43
Writing Average, 2007	146.3	154.3	41
Writing, 2007 (% at or above "proficient")	22.2%	30.6%	40

ACT	WV	U.S. Avg.	State Rank
Percentage of Graduates Tested	64%	43%	21
Math Average, 2008	19.6	21.0	47
Reading Average, 2008	21.4	21.4	36
English Average, 2008	20.8	20.6	27

SAT	WV	U.S. Avg.	State Rank
Percentage of Graduates Tested	20%	48%	30
Math Average, 2008	501	515	43
Critical Reading Average, 2008	512	502	32
Writing Average, 2008	498	494	33

AP	WV	U.S. Avg.	State Rank
Math Scores, 2008 (% with a score of 3 or higher)	51.0%	65.2%	48
Math Exams, 2008 (Exams as % of all H.S. grads)	4.3%	8.7%	43
English Scores, 2008 (% with a score of 3 or higher)	45.0%	59.2%	47
English Exams, 2008 (Exams as % of all H.S. grads)	17.2%	18.9%	20

### SUMMARY STATE EDUCATION METRICS

Selected Indicators	WV	U.S. Avg.	State Rank
High School Graduation Rate, 2005–06	76.9%	73.4%	25
Student/Teacher Ratio, 2006–07	14.5	15.5	23*
Low-income Students, 2006–07 (% of all students)	49.7%	41.6%	–
Expenditure per Student (\$), 2005–06	\$9,440	\$9,154	20

**Note:** NAEP = National Assessment of Educational Progress, AP = Advanced Placement  
N/A = Data not available. \* Lowest value receives highest ranking.

#### TABLE SOURCE NOTES:

**NAEP Assessments, grade 8:** U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics (NCES), National Assessment of Educational Progress (NAEP), 2005; **ACT Exam:** ACT, Inc., 2008; **SAT Reasoning Test:** The College Board, 2008.

**Advanced Placement (AP):** Battelle analysis of data from the College Board, 2008; AP test takers as a share of high school graduates includes graduate data from U.S. Department of Education, NCES for both public (Common Core of Data) and private high schools (Private School Survey).

**Science Teacher Indicators:** Council of Chief State School Officers (CCSSO) analysis of State Departments of Education data on public schools, 2007; U.S. Department of Education, NCES Schools and Staffing Survey, 2003–04 as reported by CCSSO, 2007.

**Summary State Education Metrics:** U.S. Department of Education, National Center for Education Statistics (NCES), Common Core of Data (CCD) on public elementary and secondary education.

**Note:** High school graduation rates are averaged freshman graduation rates—the rate is the number of graduates divided by the estimated count of freshmen 4 years earlier. U.S. figure for share of students eligible for free or reduced-price school lunch ("low-income" students) is available for 2005–06 only (state data are for 2006–07).

