



# WISCONSIN

## Sciences & Life Sciences Achievement

### STUDENT ACHIEVEMENT

NAEP Grade 8	WI	U.S. Avg.	State Rank
Science Average, 2005	158.0	147.1	9
Science, 2005 (% at or above "proficient")	38.5%	27.3%	8
Life Sciences Average, 2005	158.6	148.2	9

ACT	WI	U.S. Avg.	State Rank
Science Average, 2008	22.3	20.8	5
Biology, 2008 (% of students ready for college level)	38%	28%	7

AP	WI	U.S. Avg.	State Rank
Science Scores, 2008 (% with a score of 3 or higher)	60.7%	55.4%	10
Science Exams, 2008 (Exams as % of all H.S. grads)	9.1%	10.5%	26
Biology Scores, 2008 (% with a score of 3 or higher)	55.7%	49.8%	13
Biology Exams, 2008 (Exams as % of all H.S. grads)	4.4%	4.6%	22

SCIENCE TEACHER QUALITY and PROFESSIONAL DEVELOPMENT	WI	U.S. Avg.	State Rank
Science Teachers with Major in Assigned Field, 2003–04 (% , Grades 7–12)	76%	77%	26
Science Teachers Certified, 2006 (% , Grades 7–8)	100%	N/A%	1
Biology Teachers Certified, 2006 (% , Grades 9–12)	100%	88%	1

**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

**Middle School Life Science Education in Environmental Health** is a partnership with the University of Wisconsin at Milwaukee (UW-Milwaukee) School of Education and select Milwaukee metropolitan area schools to prepare, provide, and evaluate experimental scientific modules based on environmental

## WI STATE SCIENCE STANDARDS & REQUIREMENTS

### STANDARDS PROFILE

- Most recent update of K-12 Science Standards: **Prior to 2005**
- Next scheduled update: **2010**
- Research scientists provided input in development of standards

### BIOSCIENCE-RELATED GRADUATION REQUIREMENTS:

Biology is not required for graduation



health for middle school students in order to enhance the quality of curriculum and instruction for the students. The comprehensive modules are then taught to area teachers during an intense 1-week summer workshop. The workshop focuses on teaching relevant science through a hands-on approach, preparing the teachers to implement the module in their own classrooms.

**BioLEARN** (Linking Educators As a Resource Network) is an online collection of biology education materials created for and by Wisconsin high-school and middle-school biology teachers. They are the outgrowth of a teacher professional development program coordinated by the Center for Biology Education (CBE) in collaboration with Wisconsin life science teachers, biology faculty/staff from UW System campuses, the Wisconsin Society of Science Teachers, and other educators around the state. BioLEARN teams composed of teachers, UW System biologists, and other educators worked together to enrich their teaching by sharing their best practices, aligning teaching materials with Wisconsin Model Academic Standards, and incorporating standards-based student performance measures.

The **Wisconsin Teacher Enhancement Program**, a University of Wisconsin–Madison (UW-Madison) program, provides courses and workshops for K-12 teachers during the summer and throughout the school year.

The **Science Education Scholars Program** brings School of Education students and classroom teachers together as teams to perform summer research projects under the guidance of UW-Madison scientists.

The **Pre-College Enrichment Opportunity Program for Learning Excellence** is a UW-Madison/school partnership to enhance college

preparation and academic success of minority students from Wisconsin. CBE coordinates the science curriculum for the program's high school component and provides professional development for instructional staff.

**UW-Milwaukee** offers a **biology certification program** designed for teachers who wish to teach biology in secondary schools. It can be achieved by either completing a major or minor in biology. The university also offers a broad field science teaching certification that qualifies individuals to teach middle school and freshman science in secondary schools.

UW-Madison has a degree in **agriscience education** that is offered jointly by the School of Education and the College of Agricultural and Life Sciences. Students can also be certified in both teaching and biology.

Wisconsin offers an **Alternative Licensing Program** that enables individuals with a bachelor's degree in areas of critical shortage to be certified to teach. Critical shortage fields include math, science, computer science, special education, bilingual-bicultural, and English as a second language. Content areas difficult to fill because of geographic location may also be considered a critical shortage.

#### **Experiential Learning and Outreach**

**BioTrek** is the Science Outreach Program of the Biotechnology Center of UW-Madison and of UW-Extension. BioTrek engages the public in the outreach mission of the university by providing tours and workshops at the Biotechnology Center on the UW-Madison campus. BioTrek also offers workshops and in-service programs for teachers, students, 4-H and other Cooperative Extension groups, community clubs, and after-school groups.



The **UW-Madison Science Alliance** is a group of faculty, staff, and students who are interested in science outreach and informal science education around the state of Wisconsin. Science Alliance coordinates the science outreach programs of UW-Madison to synergize their work and to make it easier for the public to find and use the people, facilities, and other resources of UW-Madison to explore science as a way of probing the unknown. The main science outreach event coordinated by the Science Alliance is the annual **Science Expeditions** event, traditionally held on the first Saturday of April on the UW-Madison campus. The free event, open to any interested members of the public, features hands-on science stations, science shows, and science museums.

**Family Horticulture Day** is a collaboration between Science Alliance and the West Madison Agricultural Research Station. A yearly event is held in late April or early May, featuring plant and food science–related Exploration Stations,

seedling planting, and environmental information.

The **Adult Role Models in Science (ARMS)** partnership brings together community resources, UW-Madison personnel, and Madison teachers to engage elementary and middle school teachers, students, and families in hands-on science through classroom and extracurricular experiences. ARMS sponsors Family Science Nights, where UW faculty and staff share their expertise and research interests with the K-12 education community.

The **Summer Science Institute** brings high school students from underserved populations to UW-Madison for a summer residential program that provides them with academic enrichment and scientific research experience.





## Basic Skills Achievement and Other Summary Metrics

### STUDENT ACHIEVEMENT

NAEP Grade 8	WI	U.S. Avg.	State Rank
Math Average, 2007	285.6	280.2	17
Math, 2007 (% at or above "proficient")	37.0%	31.0%	13
Reading Average, 2007	264.2	261.0	24
Reading, 2007 (% at or above "proficient")	33.2%	29.2%	19
Writing Average, 2007	157.7	154.3	14
Writing, 2007 (% at or above "proficient")	35.7%	30.6%	11

  

ACT	WI	U.S. Avg.	State Rank
Percentage of Graduates Tested	67%	43%	19
Math Average, 2008	22.3	21.0	12
Reading Average, 2008	22.6	21.4	13
English Average, 2008	21.7	20.6	15

  

SAT	WI	U.S. Avg.	State Rank
Percentage of Graduates Tested	6%	48%	42
Math Average, 2008	604	515	3
Critical Reading Average, 2008	587	502	6
Writing Average, 2008	577	494	5

  

AP	WI	U.S. Avg.	State Rank
Math Scores, 2008 (% with a score of 3 or higher)	73.1%	65.2%	7
Math Exams, 2008 (Exams as % of all H.S. grads)	8.1%	8.7%	25
English Scores, 2008 (% with a score of 3 or higher)	70.1%	59.2%	8
English Exams, 2008 (Exams as % of all H.S. grads)	12.6%	18.9%	35

### SUMMARY STATE EDUCATION METRICS

Selected Indicators	WI	U.S. Avg.	State Rank
High School Graduation Rate, 2005–06	87.5%	73.4%	1
Student/Teacher Ratio, 2006–07	14.8	15.5	27*
Low-income Students, 2006–07 (% of all students)	31.2%	41.6%	–
Expenditure per Student (\$), 2005–06	\$9,993	\$9,154	15

**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).