

## APPENDIX B: Profile of a High-Performing High School, Wayland High School

### Introduction

Located in a demographically advantaged suburb about twenty miles west of Boston, Wayland High School is one of the highest performing high schools in the state in science with a CPI of 96.3. Eighty-seven percent of Wayland High students pass the high school science MCAS at the advanced or proficient level. With adequate funding, support and resources, as well as a highly qualified teaching staff, Wayland provides an example of an exemplary science program. While this profile of Wayland High is not meant to advocate for other high schools to replicate every aspect of Wayland High's science program (indeed, that may be impossible), it is intended to highlight the level of support for and emphasis on high quality science learning to which, ideally, all of the Commonwealth's students would have access.

### School Policies

Wayland High School students are required to take a minimum of two years (eight credits) of science in order to graduate. However, the school's policy handbook stipulates that "for college admission, the admissions standards for the Massachusetts four-year college system are a good general guideline" and these standards require three years of science courses (including two courses with laboratory work). About 90% of Wayland High's students take at least four years of science.

Wayland High school students (starting in the second semester of their freshman year) have free blocks, or unstructured study halls, throughout their schedule. These are intended to help students learn to use their free time wisely, in preparation for the less structured environment of college. According to school staff, there has been, "strong, positive feedback from our graduates that the 'open campus' helped them in the transition to college."

The high school schedule spans from Monday through Friday from 7:30 a.m. until 2:15 p.m. with an early dismissal day every Wednesday at 1:05 p.m. to allow for professional development time for teachers. The school operates on an 8-day, 8-period cycle with 6 of the 8 periods meeting each day.

Table 9. 2008 Student demographic information

African American	2%
Asian	9%
Hispanic	4%
White	83%
Other/Multi-Racial	1%
First Language Not English	5%
Special Education	16%
Low-Income	4%

### Courses

There are three levels of courses at Wayland High: Introductory, College and Honors/AP. The majority of the ninth grade class enrolls in either College Physical Science (approximately 48% of students) or Honors Biology (approximately 49% of students), with a small minority (about 3% of students) enrolling in the Introductory Physical Science course. Students who stay in the Introductory strand advance to Introductory College Biology in 10th grade; College Chemistry (environmental) in 11th grade; and Principles of Technology in 12th grade. Students who stay in the College strand advance to College Biology in 10th grade; College Chemistry (either environmental or quantitative) in 11th grade; and College Physics in 12th grade. Students who stay in the Honors strand advance to Honors Chemistry in 10th grade; Honors Physics in 11th grade; and one or more AP courses in Biology, Chemistry or Physics. Though the majority of students pursue the strand that they selected or were placed into in 9th grade, there is some movement of students into both more advanced and less advanced strands.

Teachers in Wayland High's science department function in subject-area teams: Physical Science, Biology, Chemistry and Physics. Each team works together to develop the curriculum for its subject and teachers take turns acting as the lead for each unit. This approach enables subject-area teams to align and sequence their curriculum to ensure that all students, no matter which teacher they have, cover the same content at the same time. It also fosters collaboration—because

the entire team develops the course jointly. Each teacher can take the lead on a particular area of the course that is of interest to them and their colleagues will do the same. It allows all students to benefit from the expertise and strengths of all the teachers.

In addition, none of the science teachers have their own classrooms. Instead, there are rooms that are designated for Biology, Chemistry, Physics, and other subjects and teachers rotate to these rooms depending on the subject they are teaching. The home base for science teachers is the science department office, which is shared by the entire science faculty. This arrangement has the result of fostering constant collaboration between faculty members with and across science subject areas. As Biology teacher Imbornone describes, "You can't hide in your room and do your own thing; there is built-in accountability to the other teachers on your team."

### **Staffing and Professional Development**

One hundred percent of Wayland High's core academic teachers are highly qualified, as compared with the state's average of 95.8. The science department is extraordinarily credentialed. All teachers are certified in the science subject they teach and two teachers are dual certified in both chemistry and physics. All of the teachers have undergraduate degrees in science. Of the 12 teachers in the science department, two have Ph.D.s in science and 10 have Masters degrees in science-related fields.

Teacher turnover at Wayland High is rare and usually occurs due to retirements. As new teachers are hired, they are paired with mentor teachers by subject area as part of a year-long mentor program. Mentors and mentees have formal meetings once every cycle (every 8 days) as well as constant informal meetings. Biology teacher Jessica Imbornone explained that mentoring really occurs as teachers team teach.

Each Wednesday, Wayland High students are dismissed early to allow faculty to spend the afternoon engaged in professional development. Once or twice a month the Wednesday afternoon time is used for school-based professional development. Once each month the science department holds a department meeting during this time and once or twice each month individual subject-area teams work together to develop and enhance their curricula.

### **Student Support**

Wayland High science teachers post the times of their prep periods on the door of the science department office. Similar to college professors posting office hours, this makes it possible for students who are having trouble in science to come to the science office during a free period and receive one-on-one support from any of the teachers. Since all of the science courses are in synch, a student with a question about her/his Biology course may meet with her/his own teacher or with another of the teachers who teach that subject. It is mandatory for all freshmen to attend study halls during first semester. This time is designed for freshmen to work on assignments, prepare for upcoming quizzes and tests, and develop good study habits.

Wayland High recently received a grant from the Department of Elementary and Secondary Education to provide stipends for teachers to support the small number of students who are struggling to pass the high school science MCAS. This tutoring will be delivered by the science faculty and will take place during the school day.

Wayland High also has an Academic Center, which is staffed by one full-time resource teacher, one full-time teaching assistant, volunteer tutors, and National Honor Society (peer) tutors, all of whom provide assistance to students who are struggling. Students can drop in for occasional academic assistance, set up a regular tutorial schedule in any subject, get help with a particular assignment, borrow class materials, do research, use a lap top computer, study with a group, study individually, and/or learn study skills. Tutoring in the Academic Center is completely free and voluntary and occurs during the school day.

### **Enrichment**

Wayland High has a diverse menu of science-related clubs available from which students can choose. The clubs are student-led and driven by students' interests. Science-related clubs include: the Environmental Club, the Science Olympiad, Roots and Shoots, and Robotics. The school schedule allows for clubs to meet during the school day once a month. This allows students who participate in athletics after school to participate in clubs at least monthly.