

Worcester Polytechnic Institute (WPI)

Integration through inquiry-based projects, civic learning, and global learning

At WPI, most students major in science, engineering, or management. More than thirty years ago, the institute changed its graduation requirements from prescribed sets of courses to a sequence of three projects through which students both advance and demonstrate their learning. The projects all are based on inquiry, each with a different integrative emphasis.

- *Integration of humanities or arts:* All lower-division students complete a three-credit-hour project on a theme they identify as running through at least five previous courses. Usually completed in the sophomore year, this project most often takes the form of an original research paper or creative work. The intent is to provide students with sufficient familiarity in an area of the humanities or arts to promote a lifelong interest.
- *Integration of science/technology with societal concerns:* Intermediate-level students (mostly juniors) complete a nine-credit-hour interdisciplinary, practical project at the interface of science/technology and society. The intent of this civic learning is for all students to understand, as professionals and as citizens, how science and technology both affect and are shaped by social structures. Sixty percent of projects occur at WPI's centers around the world, where teams of students solve such problems as soil pollution abatement in Thailand, sewage disposal in Venice, or botanical garden design in Costa Rica. All projects terminate with a technical report and oral presentation to a faculty committee.
- *Integration within the major field and of theory with practice:* All seniors complete a nine-credit-hour project in their major at a level appropriate to a beginning graduate student or an entry-level professional. The intent is for students to demonstrate that they can apply the appropriate facts, theories, methodologies, and analytic skills of their major area to frame and solve a problem. Depending on the discipline, the focus may be on design, synthesis, experimentation, or theoretical investigation.

Commentary: WPI's sequence of rigorous projects models a purposeful pathway. At least three different kinds of integration are developed through inquiry, culminating in a professional-level outcome. Students move from depth and integration in general studies to depth and integration in major studies. As many students complete one or more of the projects during an international placement, they also develop global learning; WPI has the second highest percentage among doctoral-granting institutions of students with international experience. The program also stresses other important outcomes: effective writing, oral communication, and teamwork. The global component could be further strengthened if it were introduced at the beginning of college and then reinforced in the senior year.