



A newsletter of the Society of Actuaries/Casualty Actuarial Society

2009 Summer Issue



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## University Spotlight–Worcester Polytechnic Institute

*By Russell Yang Gao*

Founded in 1865, Worcester Polytechnic Institute (WPI) was one of the earliest technological universities in the United States. Its alumni invented the first liquid rocket, stainless steel, the first practical air bag system, among other world-changing discoveries. The Mathematical Science department is one of its oldest departments, since mathematics is the foundation of virtually all scientific and engineering work. Built on the strong mathematic tradition, the actuarial program is probably WPI's best-kept secret.

### The Actuarial Program

The actuarial program at WPI is relatively small, typically enrolling 20–30 students. Compared with programs in larger universities, the program at WPI has far smaller lecture sizes and allows more interaction between professors and students.

Although small, the actuarial program at WPI is well-established. It is listed on the Society of Actuaries' (SOA) Web site as an Advanced Undergraduate Program. Built in the Mathematical Science department, the program has a strong mathematical curriculum, covering interest theory, actuarial mathematics, risk theory, and loss models. These courses can prepare students for the preliminary exams offered by the SOA, i.e., Exam P, FM, MLC, and C. The program also requires courses that count towards the Applied Statistics and Economics VEE requirement. In addition, some students have taken a graduate course to satisfy the Time Series VEE requirement.

Prof. Jon Abraham is the Actuarial Program Coordinator at WPI. He is a fellow of the Society of Actuaries and a member of the American Academy of Actuaries. He brings extensive industry experience in teaching and advising students. In 2007, he won the Board of Trustees Award for Outstanding Academic Advising at WPI.

In addition to class-room learning, students also benefit from many practical courses the Career Development Center and the Library at WPI provide: resume writing, interviewing, Excel, and Access. Many students also find internships and co-ops through the Career Development Center.

The Project-Based Learning and Real-World Connection

A key characteristic of WPI's undergraduate education is its project-based learning philosophy. Students often need to complete projects for individual courses, many of which are drawn from real-life problems. In addition, students need to complete three important requirements to graduate: Humanities and Arts, Interactive Qualifying Project (IQP), and Major Qualifying Project (MQP).

The Humanities and Arts requirement ensures that students appreciate the depth and breadth of human experience. For the depth requirement, students need to take three humanity courses that are in the same area (e.g., Philosophy or History) that concludes in an inquiry-based seminar or a practicum (such as a theatre performance).

The IQP asks students to explore the interaction between science and society. Students often complete this project in teams and participate in an annual competition. The winning projects range from installing solar panels for a village in Thailand and exploring the impact of solar technology in that village to building energy-efficient homes in Namibia.

The MQP asks students to apply what they learned in their major courses to solve a theoretical or practical problem. For actuarial students, it offers a great opportunity to connect with the real world. Some of actuarial students' MQPs include: pricing long-term care insurance, pricing auto insurance, predictive modeling, and pricing credit default swaps. Many of the MQPs have corporate sponsors, which provide strong support and guidance for students to complete their research. According to Prof. Abraham, recent corporate sponsors include John Hancock, Hanover, Towers Perrin, Hewitt Associates, Fidelity, Banc of America Securities, and Morgan Stanley.

Besides completing a project at school, many students also gain real-world experience through a summer internship or a co-op. According to Prof. Abraham, in the past few years students have interned at John Hancock, Hanover, Towers Perrin, Hewitt Associates, Fidelity, Sun Life, Aetna, Hartford Life, Hartford P&C, Travelers, Metropolitan Life, Swiss Re, and Blue Cross Blue Shield.

Through various project work in and out of college, students not only learn how to apply theory to practical problems, but also how to solve problems independently and how to work with others. Alumni often feel that the education prepared them well for today's challenges in a fast, complex, competitive and cooperative workplace.

Would you like to see your college or university's actuarial science program featured in The Future Actuary? Contact Kathryn Baker, Senior Communications Associate at the SOA at [kbaker@soa.org](mailto:kbaker@soa.org).