PA 510 Making the Smart Grid Work in the Real World: Edition 5.0

Registration is now open for graduate and professional development students in PSU’s innovative course on the Smart Grid and Sustainable Communities

About the Program

This two-term course series, called Designing the Smart Grid for Sustainable Communities, examines a set of emerging concepts, technologies, applications and business models involved in transforming the nation’s century-old, centralized power grid into a climate, consumer, and renewable energy friendly “Smart Grid.” Students have the option of taking this course for 4 graduate credits or through our non-credit professional development track.

During our Winter Term course, called The Smart Grid and Sustainable Communities: Making the Connections – 14 graduate students and 17 professional development students from throughout the Northwest and beyond learned the foundational concepts from a first-rate, six-person multidisciplinary faculty team and well known guest presenters. The class included lectures, panel discussions, team projects, course readings tailored to a wide range of knowledge and experience, and optional field trips. The students also fine-tuned their ability to work effectively in multidisciplinary small group teams in preparation for the Spring Term projects.

The Spring Term course, Making the Smart Grid Work in the Real World, will explore new topics and delve into issues we have already touched on more deeply. It will feature new presentations from our expert faculty and new guest speakers. In addition, new small group teams will form and apply this knowledge by working on actual projects that determine if and how the Smart Grid and related technologies and approaches can support sustainable development and a cleaner energy future.

Dates and Location

Spring Term:
- Wednesdays, April 8 - June 10, 2015 - 6:40 - 9:40 PM
- PSU Urban Center Room 204 (506 SW Mill Street)

Tuition and Fees

- Credit (4 graduate): $1,380 (resident)
  CRN: 65367 $2,156 (non-resident)
  Additional university fees may apply
- Professional Development: $1,100 (non-credit)

Distance Learning

The course is taught at PSU’s Distance Learning Center, which provides several ways for students who live away from Portland or who expect to travel during the Spring the participate. See the course website for more information. For more information, see the Distance Learning Options on the course website.

For more information:
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Register:
www.pdx.edu/cps/smartgrid
Course Content and Approach

This course series incorporates many innovative features summarized in the Course Factsheet. In addition, each edition of the series addresses new questions and challenges that fall within the broad intersection of electricity, information technology, consumer empowerment, and sustainability. Since the amount of change and uncertainty the electricity industry has experienced over the past two years is unpredicted in our lifetimes, much of the 2015 edition is brand new.

During the Winter Term, we explored the implications of many of the new and emerging technologies and concepts that are associated with or can be enhanced by the “Smart Grid”: smart grid edge and core grid technologies, demand response, energy efficiency, energy storage, distributed generation, energy imbalance markets and other renewable resource integration strategies, and more. We also considered conceptual frameworks to help us explore these topics, learned about the existing physical grid and how it operates, and received a whirlwind history of the grid technology, markets, planning, and regulation.

However, we have also gone far beyond the latest technological innovations and current practices. We also explored the implications of:

- The growth of “disruptive” technologies and financing models, calls for new business and regulatory models, related issues associated with the anticipated “utility death spiral”, and their relationship to the Northwest’s energy profile;
- Wholesale markets and managing variable resources in a fixed obligation world;
- Demand manipulation strategies by technology and pricing;
- Stakeholder hopes and concerns with smart meters, the smart grid, distributed generation, demand response, renewables integration, and other emerging technologies and business and financing models;
- Interoperability opportunities and challenges;
- The concepts behind the vision of “community energy sustainability”; 
- New strategies to encourage the successful integration of more wind, solar and other cleaner but more intermittent and distributed forms of energy;
- Calls for transformative change and the emergence dramatically different visions of our energy future;
- Workforce challenges and job opportunities associated with the transition to a greener energy economy;

The faculty team has been consulting with several of our partners – including the Northwest Power and Conservation Council, Portland General Electric, Smart Grid Northwest, demand response visionaries and a Portland Ecodistrict - on fascinating projects the small group student teams could collaborate on. The class will decide which of the candidates projects the student teams will address; we will try our best to ensure that students with strong preferences will be assigned to a project that interests them. Each student team will be supported by a faculty member and expert advisors. Check the course website for more information as it becomes available on the candidate “real world” projects we might decide to work on.

While priority registration is given to students who continue from Winter Term, we appreciate that not all students are able to continue during Spring Term. We will welcome new students interested in taking their place, and will make a special effort to help bring them up to speed.

Professional development students also welcome to simply attend class sessions, listen to the presentations from faculty members and nationally known guest speakers, and not get deeply involved in one of the small group projects. We will make sure this course meets their needs as well.

The series closes with a public forum, called Powering the Future, where the student teams will present their recommendations to a select audience of senior energy professionals, community leaders, and potential employers.

Thanks to Our Course Sponsors

Many thanks to our course underwriters: Portland General Electric and Intel! Their financial support has allowed us to hire the interdisciplinary faculty and bring in top-notch guest presenters.