

## **A Course on *Risk Analysis* with Application to the Current and New Nuclear Plants and Fuel Cycle Facilities**

### **Executive Summary**

This proposed effort will develop a course suitable for combined in-person and distance learning delivery related to risk analysis. The fundamentals of the subject will be explored at a level appropriate to a fourth- or fifth-year senior engineering student, a graduate student, or a working nuclear professional. Specific examples and applications will be made to the nuclear power industry and fuel cycle facilities regulated by the NRC. In addition and importantly, this effort will explore new applications of the course subject matter to new and proposed advanced fuel cycle facilities. This broader study and application to the larger fuel cycle will also prepare graduates for work in the Department of Energy's national laboratories, the Department of Homeland Security, and related agencies where risk analysis may be applied to areas such as proliferation risk, nuclear security, transport of radioactive materials (including used fuel), etc.

The course development will be comprehensive in that it will address traditional applications of probabilistic risk assessment to nuclear power plants but will also address more recent topics such as applications of risk information to power plant regulations (i.e. risk-informed, performance-based regulation.) One or more industry speakers will be sought from one of the nearby power plants to make a presentation on how this is implemented in the power industry. Such an event will also provide students the opportunity to interact with an industry professional working in this area and possibly motivate them toward this career path.

The University of South Carolina's nuclear engineering graduate program is offered via distance learning to working professionals. The effort will make use of innovations in distance learning including high-quality video capture of lectures using Camtasia and a tablet PC. Live video, two-way audio delivery of lectures will also be available using Adobe Connect.

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