

Welding and Nondestructive Evaluation Technology for Nuclear Engineering Applications

Executive Summary

A revival of the nuclear industry is expected to address national and worldwide energy needs, leading to increased demand for appropriately trained engineers. Louisiana's energy industry foresees a major need for engineers with appropriate backgrounds to replace an aging specialist workforce and to support new plants currently under design. A need for future graduates exists to ensure the continued safe operation of the existing nuclear power plants and the design, construction, and operation of new plants. To meet these demands, this curriculum development project will enhance educational infrastructure at Louisiana's flagship university, Louisiana State University (LSU), in the areas of modeling, design, and analysis of welding processes and in the Nondestructive Evaluation (NDE) technology with an emphasis on the nuclear industry. This will develop expertise in the areas of welding engineering, computational weld modeling, and NDE analysis in two consecutive courses: a *Basic Course* and an *Advanced Course*, which will cover critical details of welding processes and NDE course materials. The goals will be to establish a high-quality welding program within the LSU Mechanical Engineering Department that will enrich the experience of our LSU and Southern University (SU) students, including minorities and women, to make them marketable to related industry sectors. Excellent course materials, innovative techniques, extensive laboratory experience, and industrial internships will be the essential components of the program. Funding will support the design of the new courses, improvements in student laboratories, and implementation of the program. It is anticipated that a minor in a Materials Welding will be implemented by the end of the project period. Strong collaborative initiatives have been created among LSU, SU, and our local nuclear power companies – Entergy Corp. and The Shaw Group, Inc.

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