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## DEVELOPMENT OF NUCLEAR ENGINEERING EDUCATION IN JORDAN

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The establishment of a Nuclear Engineering program is another step in Jordan's efforts to develop its nuclear infrastructure, and to introduce nuclear power as part of its energy mix. Nuclear energy offers a promising approach to meeting Jordan's energy needs—an approach that would reduce our dependence on oil imports, create jobs, raise the standard of living, and alleviate the burden on the national budget. Nuclear energy will also be required to provide electricity to fulfil growing electrical demands, water desalination, and hydrogen production.

The Nuclear Engineering department at Jordan University of Science and Technology (JUST), is the first and only such department/program in Jordan. The university itself is a scientific university with more than 17000 undergraduate students and 1000 graduates, including more than 3000 international students from 41 different countries. Approximately 6,000 students are enrolled in the college of engineering.

Our goal is to establish a world class department, which will enhance nuclear knowledge in Jordan, and will graduate qualified engineers that will help in the design, building and running of Jordan's first nuclear power plant. It is also our goal to serve as Jordan's leading nuclear research center.

The department is planning to start accepting students in the next academic year (2007/2008), which starts in September 2007, it will accept students both in the freshman and sophomore levels (first and second year). Thus graduating its first class in 2011, this is the period that Jordan will be in the building phase of its first nuclear power plant. Consequently nuclear knowledge transfer from nuclear suppliers and contractors of developed nations to our graduates working with them will be more realistic.

The objectives of the nuclear engineering program are to educate students in the fundamental subjects necessary for a career in nuclear engineering, and in the basics of nuclear technology, radiation measurement, and nuclear reactors, and to train students in the basics of instrumentation use, laboratory techniques, and data acquisition, interpretation and analysis.

Four elements will determine the success of this department and whether it will provide top quality education that will lead to realistic teaching instruction; Curriculum, Faculty, Facilities, and Students, each are discussed in this paper.

The curriculum focuses on nuclear power engineering, in particular nuclear power from fission reactors. World class courses are anticipated to be offered, and the curriculum is set at the ABET standards and it is expected that the department will seek to obtain its accreditation.

The curriculum gives the student a very strong background in basic sciences and engineering, the curriculum also prepares the graduate for work in many areas where a broad technical background is more important than specialization in a specific field.

The program is designed to fulfil Jordan's needs for nuclear engineers and scientists, thus the students populace and department size should remain within the boundaries that serve this purpose. It is imperative that the university prepares a public relation campaign, to introduce

the program to future students and their families in order to attract the top high school graduates.

The quality of teaching at any institution depends to a large extent upon the quality of the faculty and academic staff. To ensure a top quality educational program, the department has to be staffed by faculty and academic staff whose graduate and undergraduate work is in nuclear engineering, or graduates with practical experience in the nuclear field, and who have gained enough nuclear knowledge, to be transferred to students.

The enormous challenge that will face the university will be staffing the department with such high caliber people. The present University salary system where all professors whether they teach music, history, or rocket science earn the same salary, is obsolete and would definitely undermine the department, and hinder its success.

The department will be equipped with all necessary labs and facilities for the students training, to support the curriculum, and for carrying on research. The department plans to be the leading nuclear research center in Jordan. The department is currently working on establishing the following laboratories: Radiation Detection and Measurement Laboratory, High Speed parallel computational Lab, Sub-Critical Reactor Lab, Graphite Pile Laboratory, Environmental monitoring Laboratory, Thermal sciences Laboratory, Research and Training Reactor (RTR).

#### **REFERENCES**

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