

# NUCLEAR ENGINEERING MATERIALS, CERTIFICATE

The goal of this certificate is to combine a comprehensive set of course curricula that will provide students with an understanding of the challenges and remedial measures associated with materials in nuclear energy systems. It includes courses in radiation damage, nuclear fuel performance, corrosion, and joining/welding. A laboratory course will provide hands-on experimental analysis in the areas of corrosion, welding, radiation damage, and non-destructive evaluation.

Students learn the challenges and remedial measures associated with materials in nuclear energy system and conduct experimental analysis in corrosion, welding, radiation damage, and nondestructive evaluation.

## REQUIREMENTS

Code	Title	Credits
<b>Required courses (13 credits)</b>		
N E/M S & E 423	Nuclear Engineering Materials <sup>1</sup>	3
N E 424	Nuclear Materials Laboratory	1
N E 541	Radiation Damage in Metals <sup>1</sup>	3
M S & E/N E 433	Principles of Corrosion	3
M S & E/M E 435	Joining of Materials: Structural, Electronic, Bio and Nano Materials	3
or M S & E/ M E 462	Welding Metallurgy	
<b>Elective courses (minimum 3 cr.)</b>		
CIV ENGR 445	Steel Structures I	3
CIV ENGR 447	Concrete Structures I	3
M S & E 330	Thermodynamics of Materials	4
M S & E 352	Materials Science-Transformation of Solids	3
M S & E 463	Materials for Elevated Temperature Service	3
M S & E 560	Fundamentals of Atomistic Modeling	3
M S & E 570	Properties of Solid Surfaces	3

<sup>1</sup> Because M S & E 350 Introduction to Materials Science or M S & E 351 Materials Science-Structure and Property Relations in Solids are prerequisites for N E/M S & E 423 Nuclear Engineering Materials and N E 541 Radiation Damage in Metals, students are expected to take one of the two of these courses as prerequisites for the certificate.