

NES 563000 RADIATION EFFECTS IN MATERIALS

Prof. Ji-Jung Kai

3 credits

M5M6M7

Rm 402

Spring 2014

CONTENTS

Schedule

Chapter 1	Radiation Damage Events	1	week
Chapter 2	The Displacement of Atoms	2, 3	weeks
Chapter 3	The Damage Cascade	4	week
Chapter 4	Point Defect Formation and Diffusion	5, 6	weeks
Chapter 5	Radiation-Enhanced Diffusion and Rate Theory	7, 8	weeks

(Mid-term examination)

Chapter 6	Radiation-Induced Segregation	9, 10	weeks
Chapter 7	Dislocation Microstructure	11, 12	weeks
Chapter 8	Irradiation-Induced Voids and Bubbles	13, 14	weeks
Chapter 9	Radiation Hardening and Embrittlement	15, 16	weeks

(Final Examination)

Text Book:

D.R. Olander, "Fundamental Aspects of Nuclear Reactor Fuel Elements", Chapters 17-19, TID-26711-P1, U.S. ERDA, 1976.

Reference:

1. M.W. Tompson, "Defects and Radiation Damage in Metals", Cambridge University Press, 1969.
 2. Gary S. Was, "Fundamentals of Radiation Materials Science", Springer, 2007
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Grades:

Midterm Examination	(30%)
Final Examination	(30%)
Home Works	(10%)
Final Report	(10%)
Class Performance	(20%)