MSE 5321

Phase Transformations of Materials

Goals	To provide fundamentals of thermodynamics, phase diagrams, diffusion theory, and structure and properties of surfaces and interfaces, and physical and mathematic treatments of phase transformations by nucleation and growth, solidification, spinodal decomposition, and diffusionless transformations.
Instructor:	Dr. Yaowu Hao
Office:	301 ELB
Phone:	**(**817)272-0752
Email:	yhao@uta.edu
Text Book:	**"**Phase Transformations in Metals and Alloys" by D. A. Porter and K. E. Easterling
Homework	Weekly
Examinations	Midterm and Final

Grading:		
	Quizzes (~20 minutes, biweekly)	40%
	Midterm	30%
	Final	30%

Tentative Schedule:

Lecture 1	Introduction
Lecture 2	Thermodynamics and Phase Diagrams
Lecture 3	Thermodynamics and Phase Diagrams
Lecture 4	Thermodynamics and Phase Diagrams
Lecture 5	Thermodynamics and Phase Diagrams
Lecture 6	Thermodynamics and Phase Diagrams
Lecture 7	Thermodynamics and Phase Diagrams
Lecture 8	Diffusion
Lecture 9	Diffusion
Lecture 10	Diffusion
Lecture 11	Diffusion
Lecture 12	Diffusion
Lecture 13	Diffusion
Lecture 14	Summary
Lecture 15	**Midterm**

Lecture 16	Crystal interfaces and Microstructure
Lecture 17	Crystal interfaces and Microstructure
Lecture 18	Crystal interfaces and Microstructure
Lecture 19	Solidification
Lecture 20	Solidification
Lecture 21	Solidification
Lecture 22	Solidification
Lecture 23	Solidification
Lecture 24	Diffusional Transformations
Lecture 25	Diffusional Transformations
Lecture 26	Diffusional Transformations
Lecture 27	Diffusionless Transformations
Lecture 28	Diffusionless Transformations
Lecture 29	Summary

Final Exam

Classroom Behavior
Students should NOT hold conversations.
Wireless communications devices MUST be silenced.

American with Disabilities Act
The University of Texas at Arlington is on record as being committed to both the spirit and letter of federal equal opportunity legislation; reference Public Law 93112 - The Rehabilitation Act of 1973 as amended. With the passage of new federal legislation entitled Americans with Disabilities Act (ADA), pursuant to section 504 of the Rehabilitation Act, there is renewed focus on providing this population with the same opportunities enjoyed by all citizens.

As a faculty member, I am required by law to provide "***reasonable accommodation"*** to students with disabilities, so as not to discriminate on the basis of that disability. Student responsibility primarily rests with **informing faculty at the beginning of the semester and in providing authorized documentation through designated administrative channels.** If you require an accommodation based on disability, I would like to meet with you in the privacy of my office during the first week of the semester to make sure that you are properly accommodated.

Academic Dishonesty
It is the philosophy of the University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University.

"Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts." (Regents' Rules and Regulations, Part One, Chapter VI, Section 3, Subsection 3.2, Subdivision 3.22)

In particular, it is expected that in the course of taking an examination, students will NOT (1) accept information of any kind from others; (2) use any material that is unauthorized by the examiner;(3) use aids to memory other than those expressly permitted by the examiner. Following an examination, students will not try to deceive the instructor by misrepresenting or altering their previous work.

For homework, students can discuss questions with each other, but each student must write the answers in his/her own words.