

MATSCEN 7845 (Approved): Solid Surfaces and Interfaces

Course Description

Elements of surface and interface science. Thermodynamics, structure, microstructure and kinetics of interfacial phenomena in materials.

Prior Course Number: 845

Transcript Abbreviation: Solid Surf Interf

Grading Plan: Letter Grade

Course Deliveries: Classroom

Course Levels: Graduate

Student Ranks: Masters, Doctoral

Course Offerings: Autumn, Spring

Flex Scheduled Course: Never

Course Frequency: Every Year

Course Length: 14 Week

Credits: 2.0

Repeatable: No

Time Distribution: 2.0 hr Lec

Expected out-of-class hours per week: 4.0

Graded Component: Lecture

Credit by Examination: No

Admission Condition: No

Off Campus: Never

Campus Locations: Columbus

Prerequisites and Co-requisites: MATSCEN-6730, MATSCEN-6737, MATSCEN-6747.

Exclusions: Not open to students with credit for MATSCEN-845

Cross-Listings:

The course is required for this unit's degrees, majors, and/or minors: No

The course is a GEC: No

The course is an elective (for this or other units) or is a service course for other units: Yes

Subject/CIP Code: 14.1801

Subsidy Level: Doctoral Course

Programs

Abbreviation	Description
MATSCEN	Materials Science and Engineering

General Information

Students should have a working knowledge of crystal and defect structures, solid-state diffusion, and phase equilibrium.

Course Topics

Topic	Lec	Rec	Lab	Cli	IS	Sem	FE	Wor
Thermodynamics of Surfaces and Interfaces	6.0							
Surface & Interface Structure	6.0							
Surface Energy, Anisotropy, and Equilibrium Forms	5.0							

Topic	Lec	Rec	Lab	Cli	IS	Sem	FE	Wor
Interfacial Segregation	4.0							
Kinetic Phenomena	6.0							

Grades

Aspect	Percent
Homework	20%
Midterm	40%
Final	40%

ABET-EAC Criterion 3 Outcomes

Course Contribution	College Outcome
a	An ability to apply knowledge of mathematics, science, and engineering.
b	An ability to design and conduct experiments, as well as to analyze and interpret data.
c	An ability to design a system, component, or process to meet desired needs.
d	An ability to function on multi-disciplinary teams.
e	An ability to identify, formulate, and solve engineering problems.
f	An understanding of professional and ethical responsibility.
g	An ability to communicate effectively.
h	The broad education necessary to understand the impact of engineering solutions in a global and societal context.
i	A recognition of the need for, and an ability to engage in life-long learning.
j	A knowledge of contemporary issues.
k	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Prepared by: Mark Cooper