



**THE OHIO STATE UNIVERSITY**  
COLLEGE OF ENGINEERING

# Quantitative Introduction to Materials Science

## MATSCEN 5605

### Credit Hours:

3.00 - 3.00

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### Course Components:

Lecture

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### Course Description:

A quantitative survey of the key elements related to the processing, structure and properties of materials. Structural materials and core aspects are emphasized. Intended for MS/PhD students enrolled in MatScEn who come from a non-MatScEn background.

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### Prerequisites and Co-requisites:

Prereq: Grad standing in MatScEn or WeldEng; or permission of instructor.

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### Course Goals / Objectives:

- Provide student the essential vocabulary in materials science.
- Provide quantitative tools for description of the structure of crystalline solids.
- Provide descriptions of the key tools in understanding materials transformations, such as phase diagrams, thermodynamic driving forces as well as kinetic limitations through diffusion and nucleation
- Link the mechanical properties of crystalline solids to dislocations and defect structure