



# Ceramic Processing

## MATSCEN 5551

**Credit Hours:**

3.00

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**Course Levels:**

Undergraduate (1000-5000 level)

Graduate (5000-8000 level)

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**Course Components:**

Lecture

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**Course Description:**

Overview of ceramics processing, including essential topics of: powder synthesis/characterization, colloidal/sol-gel processing, shaping/consolidation, sintering, microstructure development and nanoceramics, and thin films/coating.

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**Prerequisites and Co-requisites:**

Prereq: 3141, 3151, and enrollment as MatScEn-BS major; or Grad standing; or permission of instructor.

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**Course Goals / Objectives:**

- Choose and apply appropriate powder characterization and synthesis methods
  - Choose and apply appropriate colloidal and sol-gel processing methods
  - Choose and apply appropriate powder consolidation and shaping methods
  - Choose and apply appropriate sintering methods
  - Design appropriate methods for microstructural and nanoceramics development
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**Course Topics:**

- Introduction and overview
  - Powder synthesis and characterization
  - Colloidal and sol-gel processing
  - Mixing and packing of powders
  - Forming, shaping and pre-sintering processing
  - Solid state and liquid-state sintering
  - Microstructural development and nanoceramics
  - Other methods (thin films, coatings, glass-ceramics)
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**Designation:**

Elective