MSE 6034 Kinetics
Spring Semester 2022
Department of Materials Science and Engineering

Instructor: Dr. Ling Zang
Office: Room 5543 SMBB building, 36 South Wasatch Dr.
Office Hours: 2pm – 4pm, MWF, better by appointment (5th floor of SMBB can only be accessed by authorized ID)
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Course web: http://www.eng.utah.edu/~lzang/teaching

TA: Erick Lawrence
Office: TA Hours: by appointment
Phone: Email: erick.albert.lawrence@gmail.com

Pre-requisites: Graduate Standing
Lecture: MWF 10:45 AM – 11:35 AM, MEB 2325
Lab: N/A
Credit Hours: 3

Text(s): No Textbook required.
Lecture Notes & other course materials can be downloaded from the course website:
http://www.eng.utah.edu/~lzang/mse5034&6034.html

Since we don't have a primary Textbook, the Lectures notes, together with the additional readings thus provided, are expected to offer sufficient knowledge and information that are needed for well-round understanding of Kinetics. To correlate the "abstract" Kinetics theory to the real practice of materials science engineering, we provide various such real-world examples that help understand the beauty and powerful application of the theories.

Course Description: Rate theory and diffusion applied to nucleation, crystal growth, grain growth, recrystallization, precipitation, sintering, and solid-state reactions; role of kinetics and
thermodynamics in development of microstructures. Designed to teach first year graduate students in materials science and engineering the basic rate and its application to such solid-state phenomena as diffusion solidification and transformations in solids involving nucleation and growth, spinodal decomposition, and martensitic transformations. The design of experimental techniques to solve materials-related problems is emphasized. Graduate students will be required to complete additional assignments as instructed. This course is part of the MSE Core Competency for incoming graduate students. This course is required for all incoming graduate students.

Choose an item.

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<th>Content Overview:</th>
<th>The objective of this course is to learn the basic concepts and fundamental principles of kinetics of materials and how to apply them to solve real-world materials problems.</th>
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| Grading & Evaluation Methods: | Homework: 20% (No Makeup); Midterm: 30%; Final: 50%.  
Both midterm test and final exam will be open book.  
Two rounds of homework assignments, to be turned as scanned PDF within Canvas, with 1st round due on 2/23 before 10:45am, and 2nd on 4/18 before 10:45am. 5% grade deduction to be applied for each day of delay of turning in. |

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<tr>
<th>Grading Scale</th>
<th>A</th>
<th>A-</th>
<th>B+</th>
<th>B</th>
<th>C</th>
<th>D</th>
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<td>95-100</td>
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<td>70-80</td>
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| Key Dates: | Monday, January 17 - Martin Luther King Jr. Day, Holiday  
Friday, January 21 - Last day to add or drop classes  
Monday, February 21 - Presidents Day, Holiday  
Friday, March 4 - Last day to withdraw from classes  
Sunday – Sunday, March 6 - 13 - Spring Break  
Tuesday, April 26 - Last day of classes  
**April 28, Thursday, 10:30 am – 12:30 pm, Final exam, same classroom** |
Americans with Disabilities Act Statement: “The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodation in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations.”

Faculty and Students’ Responsibilities: “All students are expected to maintain professional behavior in the classroom setting, according to the Student Code, spelled out in the Student Handbook. Students have specific rights in the classroom as detailed in Article III of the Code. The Code also specifies proscribed conduct (Article XI) that involves cheating on tests, plagiarism, and/or collusion, as well as fraud, theft, etc. Students should read the Code carefully and know they are responsible for the content. According to Faculty Rules and Regulations, it is the faculty responsibility to enforce responsible classroom behaviors, and I will do so, beginning with verbal warnings and progressing to dismissal from class and a failing grade. Students have the right to appeal such action to the Student Behavior Committee.”