Course Information	
Course title	Ceramic Materials Processing and Technology
Semester	114-2
Department	Materials Science and Engineering
Instructor	Prof. Haw-Tyng Huang
Administrative Curriculum Number	527 U2300
Teaching Curriculum Number	MSE5073
Class	
Credits	3
Full/Half Yr.	Half Yr.
Required/Elective	Elective
Time	Monday 13:20-16:20
Remarks	Limit: 50 students
Ceiba Web Server	
Table of Core Capabilities and Curriculum Planning	
Course Syllabus	
Course Description	This course is to provide a guide to production of bulk and thin film ceramic materials. The processes will be examined from the viewpoints of thermodynamics, kinetics, and phase equilibrium and transformations. In addition, the application of ceramic materials in modern technology will be introduced.
Course Objective	It is expected that upon completion of this course, the student will be able to understand the synthesis method of ceramic material and their technological importance.
Course Requirement	Thermodynamics in Materials Science
Office Hours	3-4 hours
References	Campbell, S. A., Fabrication Engineering at the Microand Nanoscale, Oxford University Press Inc., 2008.
Designated reading	1. Evans, J.W. and De Jonghe, L.C. The Production of Inorganic Materials. Prentice Hall, 1991. 2. Dehoff, Robert T. Thermodynamics in Materials Science. 2nd ed. Taylor & Francis Group, 2006.

Grading	

No.	Item	100%	Explanations for the conditions
1.	Midterm	35 %	
2.	Final exam	35 %	
3.	Final Term Project	30%	

Progress

Week	Date	Topic
Week 1	2/23	Part I: Material Processing, An Introduction
Week 2	3/2	Part 2: Chemical Thermodynamics, A Review of Auxiliary Functions
Week 3	3/9	Part 2: Chemical Thermodynamics, Chemical Potentials
Week 4	3/16	Part 2: Chemical Thermodynamics, Ellingham Diagrams
Week 5	3/23	Part 2: Chemical Thermodynamics, Predominance Diagram
Week 6	3/30	Part 2: Chemical Thermodynamics, Pyro-metallurgy
Week 7	4/06	Class Cancel due to National Holiday
Week 8	4/13	Part 2: Chemical Thermodynamics, Hydro-metallurgy and Electro-metallurgy
Week 9	4/20	Midterm Exam
Week 10	4/27	Part 3: Fabrication Engineering, Rapid Thermal Processing
Week 11	5/04	Part 3: Fabrication Engineering, Chemical Vapor Deposition
Week 12	5/11	Part 4: High Temperature Superconductor, Phenomenological Theories
Week 13	5/18	Special Topic: A case study on IP Portfolio
Week 14	5/25	Part 4: High Temperature Superconductor, Thermodynamic Effects of External Field
Week 15	6/01	Part 4: High Temperature Superconductor, Thermodynamic Effects of External Field
Week 16	6/08	Final Exam