國立台灣科技大學 114學年 第2學期　課程大綱

Spring 2026 NTUST Course Outline

授課教師：王丞浩

Instructor:Chen-Hao Wang

課程名稱：材料熱力學(二)

Course Title：Thermodynamics of Materials (II)

2026/11/3

課程代號：TX4123301 Course Code 學分數：3 Credits	必選修：必修/半學年 Required/Electve:Required/Half Yr. 先修課程： Prerequisites
節次教室：F6(TR-313) R10(TR-313) R9(TR-313) Time/Location	
專業核心能力： Core Professional Competencies	
課程網址： Course Website	
課程宗旨： Course Objectives	本課程是讓學生瞭解熱力學應用在相平衡、氣體行為、溶液行為、反應平衡等觀念。 This course aims to understand the advanced thermodynamics of phase equilibrium, gas behavior, solution behavior, and reaction equilibrium.
課程大綱： Outline of Lectures	本課程涵蓋David R. Gaskell所著「Introduction of the Thermodynamics of Materials, 4th edition」之第七章至第十四章。包括一元系統相平衡、氣體行為、溶液行為、自由能組成和二元系統相圖、氣體參與之反應、凝相和氣相參與之反應、系統包含多成分凝相之反應平衡、雙元系統在壓力-溫度-成分維度之相圖等。另外，會在一開始複習熱力學函數關係和非理想狀態計算。 This course covers the textbook “Introduction of the Thermodynamics of Materials, 4th edition, David R. Gaskell” from chapter 7 to chapter 14, including phase equilibrium in a one-component system, the behavior of gases, the behavior of solutions, Gibbs free energy composition, and phase diagrams of binary systems, reactions involving gases, reactions involving pure condensed phases and a gases phase, reaction equilibria in systems containing components in condensed solution, and phase diagram for binary systems in pressure-temperature-composition space. Besides, we will review the relations of thermodynamic functions and the calculations of non-ideal states in the beginning course.
授課方式： Method of Instruction	講授 Lecture：60% 分組討論 Group discussion：0% 案例研討 Case study：40% 操做練習 Practical exercises：0% 講授 Lecture：%
教科書： Textbooks	Introduction of the Thermodynamics of Materials, 4th edition, David R. Gaskell
參考書目： References	N/A
修課須知： Notice	

	這門課程有助教和伴讀學生，請詢問系辦。 The teaching assistant and the companion student are there for this course, and please ask the department office.
評量方式： Grading	30%第一次期中考 30%第二次期中考 30%期末考 10%平時成績 30% for the first mid-term exam 30% second mid-term exam 30% final exam 10% of normal grades
備註說明： Notes	材料系必選之一。 1. 本課程接續材料系的材料熱力學。 2. 強烈建議同學修課前自行複習前面章節。尤其是熱力學函數關係和非理想狀態計算。 3. 這門課較為艱深，需要專心上課和熟練習題。 This course is one of the required courses of Dept. MSE. 1. This course continues the thermodynamics (I). 2. It is strongly recommended that students review the previous chapters by themselves before taking the course: primarily thermodynamic function relationship and non-ideal state calculation. 3. This course is challenging and requires concentration and practice