課程資訊	
課程名稱	高等熱質量傳遞 Advanced Heat and Mass Transfer
開課學期	114-2
授課對象	化學工程學研究所
授課教師	崔宏瑋
課號	ChemE7006
課程識別碼	524EM1200
班次	02
學分	3.0
全/半年	半年
必/選修	必修
上課時間	星期一 2(9:10~10:00)星期三 3,4(10:20~12:10)
上課地點	慶琅廳慶琅廳
備註	本課程以英語授課。核心課程。初選不開放大學部選修，欲修本課在開學後找老師索授權碼。 限碩士班以上 總人數上限：60 人
課程簡介影片	n/a
核心能力關聯	核心能力與課程規劃關聯圖
課程大綱	
為確保您我的權利,請尊重智慧財產權及不得非法影印	
課程概述	Heat and mass transport are the core of many manufacturing processes, including semiconductor device fabrications, catalyst syntheses, and pharmaceutical productions. This course will introduce the fundamentals of heat and mass transport in chemical engineering as well as the relevant applications.
課程目標	Firmly establish the fundamental concepts and principles of heat and mass transfer and their advanced applications in chemical process analysis. Enhance problem-solving skills by applying the basics of transport phenomena to various systems of interest. The course will also integrate fluid mechanics to discuss the three types of transport behavior in an integrated manner.

<table>
<tr><td></td><td>The syllabus is shown as follows:
1. Thermal Conductivity
2. Shell Energy Balances-Temperature Distributions in Solids and Laminar Flow
3. The Equations of Change for Nonisothermal Systems
4. Temperature Distributions-with More than One Independent Variable
5. Temperature Distributions in Turbulent Flow
6. Interphase Transport in Nonisothermal Systems
7. Diffusivity
8.Concentration Distributions in Solids and Laminar Flow
9.Equations of Change for Multicomponent Systems
10. Concentration Distributions- with More than One Independent Variable
11. Concentration Distributions in Turbulent Flow
12. Interphase Transport in Nonisothermal Mixtures</td></tr>
<tr><td>課程要求</td><td>The course is the core course of graduate program in chemical engineering. This course will involve fluid dynamics, physical chemistry, and engineering mathematics. Students are expected to have prior knowledge of these subjects.

It is recommended that students have taken Advanced Fluid Dynamics course first.

Students are expected to be familiar with the vector and tensor notations provided in Appendix A</td></tr>
<tr><td>預期每週課前或/與課後學習時數</td><td>6 小時</td></tr>
<tr><td>Office Hours</td><td>每週一 10:30~11:30 備註： (or by appointment via email)</td></tr>
<tr><td>指定閱讀</td><td>Bird, R. B., Stewart, W. E., and Lightfoot, E. N. (2002). Transport Phenomena (2nd revised ed.). John Wiley & Sons. Focus: Appendix A, "Notation and Mathematical Background" (Vector and Tensor operations).</td></tr>
<tr><td>參考書目</td><td>Bird, R. B., Stewart, W. E., and Lightfoot, E. N. (2002). Transport Phenomena (2nd revised ed.). John Wiley & Sons.</td></tr>
<tr><td>評量方式
(僅供參考)</td><td>
<table>
<tr><th>No.</th><th>項目</th><th>百分比</th><th>說明</th></tr>
<tr><td>1.</td><td>Exam 1</td><td>30%</td><td></td></tr>
<tr><td>2.</td><td>Exam 2</td><td>35%</td><td></td></tr>
<tr><td>3.</td><td>Final</td><td>35%</td><td></td></tr>
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