

Course Syllabus

開課學期	107-2	部別	<input type="checkbox"/> 日間部 <input type="checkbox"/> 進修部
系科	通識教育中心	學制	大學部
課程名稱	化學魔法	授課教師	徐惠麗
課程類別	選修	開課班級	博學涵養 <input type="checkbox"/> 人文 <input checked="" type="checkbox"/> 自然
學分數	2	授課時間	w5(1,2)
科目代碼		辦公地點	9607A
開課代號		請益時間	

課程描述

Course Description

我們生活在一個充滿化學品的世界裏，加上化學科技的進步，使我們日常生活中的食、衣、住、行、育、樂充滿了便利性與多樣性，所以我們的人生處處依賴著化學。本課程以有趣實用的方式介紹生氣的化學，酸鹼的化學，酒的化學，溶液中的化學，清潔的化學，防護的化學，住的化學，熱的化學，健康的化學，美的化學等。

課程目標

Course Objectives

一、認知

1. 認識化學在生活中的應用。
2. 瞭解化學作用的原理。
3. 深耕學生科普知識。
4. 促進化學概念的統整，進而了解生活所需物質特性。

二、情意

1. 啟發對未來就業工作的熱忱。
2. 能與同儕合作學習。
3. 累積進入職場所需溝通能力與敬業態度。
4. 建立積極自我反省的態度。
5. 培養對所生活之土地的關懷情操。

三、技能

1. 提升實務操作能力與。
2. 累積基礎能力，提升再學習能力。
3. 應用理論於生活中，提升生活品質。
4. 養成溝通與團隊合作能力。
5. 培養發掘，思考，分析與解決問題能力。

一般能力/專業能力

General/Core Learning Outcomes

一般能力

一、人文與思維

1. 能瞭解人文、社會科學的基本概念與理論。
2. 能基於人文、社會學的基礎認識，將此知識解釋人文社會的現象，並舉例說明。
3. 能在生活中運用人文、社會學的知識，思辨、分析、批判探討人類與社會現象。
4. 能覺知人文涵養教育所引發的心靈感動，欣賞、體悟多元文化與人文內涵之美。

二、內省與關懷

- 1、能進行內觀反省，了解自己的優、缺點，並據此作出適當的行為。
- 2、能藉由內觀反省，了解周遭人的感受，對群己、環境主動表現出關懷。
- 3、能對群己、環境的關懷產生價值感，成為態度。
- 4、能具有持久且一致主動關懷環境、群己，推己及人的品格。

三、創意與表達

- 1、能有效運用口頭語言、書面文書清楚表達自己的想法和他人的意見。
- 2、能運用適當工具與方式表述資料，且表述的內容論述與結構皆完整。
- 3、能有創意性的表述，並清楚傳達自己的想法。
- 4、表述的內容具有獨創見解，並與接收者可以進行有效的溝通與論辯。

四、科學與邏輯

- 1、能認識科學方法與科學精神的基本論述及主要內涵。
- 2、能運用多種思考方法，思索事務變化的因果和形式，探討事物間邏輯性關聯。
- 3、能依據邏輯推理原則，進行批判性思考。
- 4、能運用邏輯推理、批判性思辨能力，運用於生活與工作之中。

評量標準

Assessment standards

- 期中考試 _____ % 課程記錄討論報告 30 % 平時考 _____ %
 期末考試 _____ % 期末報告 _____ % 上課參與度 30 %
 出席 10 % 口頭報告 30 % 其它 _____ %

教科書（書名、作者、出版社、備註）

Textbook (Title, Author, Publisher, Remarks)

書名 Title	作者 Author	出版社 Publisher	備註 Remarks
自製講義	徐惠麗		

參考書目（書名、作者、出版社、期刊、備註）

Reference Materials (Title, Author, Publisher/Journal, Remarks)

書名 Title	作者 Author	出版社/期刊 Publisher/Journal	備註 Remarks

授課進度

Course Schedule

週次 Week	科目主題 Course Subject	教學方式 Teaching Method	授課進度 Course Schedule
1	課程介紹 分組		
2	生氣的化學-小蘇打實驗	實作與討論	
3	生氣的化學- 氣體	實作與討論	
4	酸鹼的化學-紫色高麗菜花青素	實作與討論	
5	酸鹼的化學-彩虹杯	實作與討論	
6	酒的化學-假酒檢測	實作	
7	溶液中的化學-鼻涕蟲	實作與討論	
8	清潔的化學-手工皂製作	實作	

9	期中評量		
10	防護的化學-防蚊液製作	實作與討論	
11	住的化學-家用化學品	講述與討論	
12	熱的化學-紙火鍋	實作與討論	
13	熱的化學-燒不著的紙鈔	實作與討論	
14	健康的化學-精油萃取	示範與討論	
15	美的化學-神奇煉金術	實作與討論	
16	期末口頭報告	口頭報告	
17	期末口頭報告	口頭報告	
18	期末口頭報告	口頭報告	

科目主題對應一般能力/專業能力之涵蓋率 (填寫說明)

Coverage Rate of the Course Subject Correspond to the Ordinary Ability and Professional Ability

科目主題	能力指標涵蓋率%									
	專業能力%					一般能力%				
	1	2	3	4	5	1	2	3	4	
生氣的化學	/	/	/	/	/	0	25	50	50	
酸鹼的化學						0	25	50	100	
酒的化學	/	/	/	/	/	0	25	50	100	
溶液中的化學	/	/	/	/	/	0	25	50	100	
清潔的化學						0	50	50	100	
防護的化學						0	50	50	100	
熱的化學						0	0	50	50	
住的化學						0	25	25	25	
健康的化學						0	25	25	25	
美的化學						0	25	25	50	

專業能力說明

通識課程以訓練一般能力為主軸

一般能力說明

- 1.人文與思維
- 2.內省與關懷
- 3.創意與表達
- 4.科學與邏輯

Central Taiwan University of Science and Technology

Course Syllabus

Academic Year/Semester	107/2	Day/Night School	Day school
Department		Program	
Course Title	Magical Chemistry	Instructor	Huey-Lih Shyu
Course type		Class	
Credit Hour	2	Hour (s)	2
Course Code		Office	9607A
Subject Code		Advisory Time	
Course Description			
<p>This world are full of chemicals, and the chemical technology makes our life full of convenience and diversity, so chemistry having great importance in our life. The topic of this couse are Gas , Acid and Base , Wine chemistry , .Solution , Cleaning chemistry , Protective chemistry , Living material , Energy and Heat , Healthy chemistry , Aesthetic chemistry .</p>			
Course Objectives			
<ol style="list-style-type: none"> 1. Recognize the applications of chemistry in our life. 2. Understand the principle of chemical technology. 3. To deepen the student's knowledge of scienc. 4. Promote the integration of chemical concepts, then to understand the properties of substance in our life. 5. Enhance the ability of learning. 6. Application the theory in learning to life and improving the quality of our life. 			
General/Core Learning Outcomes			
<p>Genera Learning Outcomes</p> <p>I. Humanism and thinking</p> <ol style="list-style-type: none"> 1. Can comprehend the basic concepts and theories of humanistic and social sciences. 2. Can use the knowledge acquired from humanistic and social sciences to explain and illustrate humanistic and social phenomena. 3. Can use the knowledge of humanistic and social sciences to discern, analyze, and criticize human and social phenomena in daily life. 4. Can perceive the emotional blast triggered from humanistic nurture and appreciate the beauty of multiple cultures and humanistic spirit. <p>II. Reflection and care</p> <ol style="list-style-type: none"> 1. Can reflect upon oneself, know one's good and bad qualities and thereby act accordingly. 2. Can empathize with people around them through one's reflection, and show their care towards others and the environment. 3. Can create a sense of value and thereby form a positive attitude from their care towards others and the environment. 4. Can become empathetic towards others and develop a virtuous character that cares for others and their environment in an active manner. <p>III. Creativity and expression</p> <ol style="list-style-type: none"> 1. Can express oneself or others' opinions in a clear and effective manner, through oral or written 			

presentation.

2. Can use proper tools and methods to verbalize data and produce a logical and organized content.
3. Can convey one's ideas in an original and lucid manner.
4. Can produce insightful thoughts and make effective communication or arguments with the audience.

IV. Science and logic

1. Can comprehend the basic discourse and major contents of scientific spirit and method.
2. Can exercise multiple thinking methods to ponder on the cause and format of issues and explore their correlations.
3. Can make critical thinking based on logical principles.
4. Can apply one's logical rationalization and critical thinking to their everyday life and work.

Assessment standards

1. mid-term report 30%
2. final term report 30%
3. show up 10%
4. Class participation 30%

Textbook (Title, Author, Publisher, Remarks)

Title	Author	Publisher	Remarks
	Huey-Lih Shyu		

Reference Materials (Title, Author, Publisher/Journal, Remarks)

Title	Author	Publisher/ Journal	Remarks

Course Schedule

Week	Course Subject	Teaching Method	Course Schedule
1	Introduction	Lecture and video	
2	Gas	Practice and discussion	
3	Gas	Practice and discussion	
4	Acid and Base	Practice and discussion	
5	Acid and Base	Practice and discussion	
6	Wine chemistry	Practice	
7	Solution	Practice and discussion	
8	Cleaning chemistry	Practice	
9	Mid-term report		
10	Protective chemistry	Practice and discussion	
11	Living material	Lecture and discussion	
12	Energy and Heat	Practice and	

		discussion	
13	Energy and Heat	Practice and discussion	
14	Healthy chemistry	Demonstration and discussion	
15	Aesthetic chemistry	Practice and discussion	
16	Oral Report		
17	Oral Report		
18	Oral Report		

Coverage Rate of the Course Subject Correspond to the Ordinary Ability and Professional Ability

Course Subject	Learning Outcomes %									
	Core %					General %				
	1	2	3	4	5	1	2	3	4	
Gas	/	/	/	/	/	0	25	50	50	
Acid and Base	/	/	/	/	/	0	25	50	100	
Wine chemistry	/	/	/	/	/	0	25	50	100	
Solution	/	/	/	/	/	0	25	50	100	
Cleaning chemistry	/	/	/	/	/	0	50	50	100	
Protective chemistry						0	50	50	100	
Living material						0	0	50	50	
Energy and Heat						0	25	25	25	
Healthy chemistry						0	25	25	25	
Aesthetic chemistry	/	/	/	/	/	0	25	25	50	

Core Learning Outcomes

General Learning Outcomes

1. Humanities and Cogitation
2. Introspection and Solitude
3. Creativity and Utterance
4. Science and Logic