

I-SHOU UNIVERSITY Department of Chemical Engineering

4-Year Curriculum for Students Admitted in Academic Year 2020

*** Credits required for graduation from the Department: 128, including:**

1. GE core courses: required, 18 credits
2. GE liberal arts education: elective, 10 credits
3. Service Education: required, 0 credits
4. Physical Education: required, 0 credits
5. College-required courses: 21 credits (including 1 college-level cornerstone courses)
6. Department-required courses: 53 credits, including academic + practical courses: 7 credits, academic courses: 32 credits, practical courses: 12 credits, and capstone courses: 2 credits
7. Departmental electives: 11 credits
 - a. Academic courses: 11 credits; taking 58 credits out of 11 credits
 - b. Practical courses: 11 credits; taking 85 credits out of 11 credits; at least 3 credits from off-campus internship
8. Other electives: 15 credits

Notes:

1. Students are required to meet the requirements set by the Department for “English Proficiency,” “Information Competency,” and “Professional Certification,” in addition to earning the required number of credits to be eligible for graduation.
2. Before graduation, students are required to take at least one required cornerstone course offered by another college. The credits earned from such courses may be recognized as part of the credits under the category of Liberal Arts Education, but only a maximum of four credits will be recognized accordingly. (For more details about required cornerstone course offered by different colleges, please refer to the announcement on the website of the Curriculum Section.)

大一課程表(111) Freshman Year (2022)

類別 Category	課程代碼 Code	課程名稱 Subject	上學期 Fall	下學期 Spring	必/選修 (C/E)	備註 Remark
通識必修 GE Core	A93A17	服務教育 (一) Service Education (I)	0		必/ C	
	A93A18	服務教育 (二) Service Education (II)		0	必/ C	
	A93A22	華語文學 1.0：閱讀與敘事溝通 Chinese Literature 1.0- Reading, Narration and communication		2	必/ C	Core
	A93A30	實用英語<一> English in Practice I	1		必/ C	Core
	A93A31	實用英語<二> English in Practice II		1	必/ C	Core
	A93A29	智慧科技密碼 Secret Codes in Intelligent Technologies		2	必/ C	
	A93A28	健康醫學密碼 Unraveling the Mystery of Health	2		必/ C	Core
	A93AE	程式設計 Programming	2		必/ C	Core
	A93DA	全球化之公民素養 Civic Literacy in the Era of Globalization		2	必/ C	Core
院必修 IC Core	A83E02	產業科技導論與體驗 Introduction to Industrial Technology		2	必/ C	
	A83813	微積分(一) Calculus (I)	3		必/ C	
	A83814	微積分(二) Calculus (II)		3	必/ C	
	A83815	普通物理(一) Physics(I)	3		必/ C	
	A83812	普通物理實驗 General Physics Laboratory		1	必/ C	
	A83810	普通化學 (一) General Chemistry(I)	3		必/ C	
	A83811	普通化學 (二) General Chemistry (II)		3	必/ C	
系必修 IF Core	A05123	普通化學實驗 (一) General Chemistry Laboratory (I)	1		必/ C	
	A05124	普通化學實驗 (二) General Chemistry Laboratory(II)		1	必/ C	
	A05153	化工實務體驗 Elementary Chemical Engineering Lab.		1	必/ C	
	A05223	質能均衡 Material and Energy Balances		3	必/ C	
系選修 IF Elective	A05154	工程計算與程式應用 Engineering Calculations and Computer Programming		3	選/ E	
	A05152	普通物理(二) Genral Physics(II)		3	選/ E	
	A05134	國際化溝通 Global communication skills	2		選/ E	
	A05274	材料科學概論 Introduction to Materials Science	3		選/ E	
	A05230	生物技術概論 Introduction to Biotechnology	3		選/ E	
	A05250	生物學 Biology	3		選/ E	
本學年度必修學分數 Total Required credits for this year			36			

大二課程表(112) Sophomore Year (2023)

類別 Category	課程代碼 Code	課程名稱 Subject	上學期 Fall	下學期 Spring	必/選修 (C/E)	備註 Remark
通識必修 GE Core	A93A32	實用英語<三>English in Practice III	2		必/ C	Core
	A93A33	實用英語<四>English in Practice IV		2	必/ C	Core
	A93A23	華語文學 2.0：思辨與文案創作 Chinese Literature 2.0- Critical thinking and creativity in writing	2		必/ C	
	A93A15	體育（一） Physical Education (I)	0		必/ C	
	A93A16	體育（二） Physical Education (II)		0	必/ C	
院必修	A83809	工程數學(一) Engineering Mathematics(I)	3		必/ C	
系必修 IF Core	A05277	有機化學(一) Organic Chemistry (I)	3		必/ C	
	A05278	有機化學(二) Organic Chemistry (II)		3	必/ C	
	A05219	物理化學(一) Physical Chemistry (I)	3		必/ C	
	A05220	物理化學(二) Physical Chemistry (II)		3	必/ C	
	A05224	輸送現象及單元操作(一) Transport Phenomena and Unit Operations (I)		3	必/ C	
	A05217	有機化學實驗(一) Organic Chemistry Laboratory (I)	1		必/ C	
	A05218	有機化學實驗(二) Organic Chemistry Laboratory (II)		1	必/ C	
	A05221	物理化學實驗(一) Physical Chemistry Laboratory	1		必/ C	
	A05322	物理化學實驗(二) Physical Chemistry Laboratory		1	必/ C	
系選修 IF Elective	A05229	工程數學(二) Engineering Mathematics(II)		3	選/ E	
	A05227	電子及電工學 Electronic and Electrical	3		選/ E	
	A05382	環境工程概論 Introduction to Environmental	3		選/ E	
	A05228	材料光電性質導論 Introduction to Electrical, Optical and Magnetic Properties of Materials	3		選/ E	
	A05270	無機化學 Inorganic Chemistry	3		選/ E	
	A05282	分析化學 Analytical Chemistry	3		選/ E	
本學年度必修學分數 Total Required credits for this year			28			

大三課程表(113) Junior Year (2024)

類別 Category	課程代碼 Code	課程名稱 Subject	上學期 Fall	下學期 Spring	必/選修 (C/E)	備註 Remark
系必修 IF Core	A05321	化工熱力學 Chemical Engineering Thermodynamics	3		必/ C	
	A05330	輸送現象及單元操作(二) Transport Phenomena and Unit Operations (II)	3		必/ C	
	A05333	儀器分析 Instrumental Analysis	3		必/ C	
	A05335	儀器分析實驗 Instrumental Analysis Laboratory	1		必/ C	
	A05312	輸送現象及單元操作(三) Transport Phenomena and Unit Operations (III)		3	必/ C	
	A05320	化學反應工程 Chemical Reaction Engineering		3	必/ C	
	A05310	程序控制與工業儀錶 Process Control and Industrial Instrument		3	必/ C	
	A05427	化學工程實驗 Chemical Engineering Laboratory		2	必/ C	
系選修 IF Elective	A05460	專題研究(一) Project (I)	1		選/ E	
	A05461	專題研究(二) Project (II)		1	選/ E	
	A05484	工業污染防治技術 Techniques for Industrial Pollution Control	3		選/ E	
	A05397	高分子化學 Polymer Chemistry	3		選/ E	
	A05476	特用化學品 Specialty Chemicals	3		選/ E	
	A05342	化工裝置 Chemical Engineering Equipment	3		選/ E	
	A05338	生醫材料概論 An Introduction to Biomedical Materials	3		選/ E	
	A05371	應用電化學 Applied Electrochemistry	3		選/ E	
	A05317	應用有機化學 Applied Organic Chemistry	3		選/ E	
	A05328	細胞分子生物學 Cell and Molecular Biology	3		選/ E	
	A05442	分離技術 Separation Techniques	3		選/ E	
	A05337	應用統計 Applied Statistics	3		選/ E	
	A05341	化學工業安全 Safety of Process Industries	3		選/ E	
	A05309	生命週期評估 Life cycle assessment	3		選/ E	
	A05304	化妝品化學 Cosmetic Chemistry	3		選/ E	
	A05281	生物化學 Biochemistry	3		選/ E	
	A05479	工業觸媒 Catalysis in Practice	3		選/ E	
	A05343	AI在化工科技之應用 applications of artificial intelligence (AI) in science and engineering	3		選/ E	
	A05306	創新設計方法 Engineering Practices For Intelligent Innovation	3		選/ E	
	A05407	半導體製程 Semiconductor Processing	3		選/ E	
本學年度必修學分數 Total Required credits for this year			21			

大四課程表(114) Senior Year (2025)

類別 Category	課程代碼 Code	課程名稱 Subject	上學期 Fall	下學期 Spring	必/選修 (C/E)	備註 Remark
系必修 IF Core	A05411	程序設計Process Design	3		必/ C	
	A05429	化工專題實驗 Special Topics Laboratory of Chemical	2		必/ C	Capstone
	A05406	書報討論Seminar		2	必/ C	
	A05420	英語能力 English Proficiency Enhancement	0		必/ C	畢業門檻 Graduation
系選修 IF Elective	A05462	專題研究(三) Project III	1		選/ E	
	A05629	綠色工程 Green Engineering	3		選/ E	
	A05628	奈米技術Nanotechnology	3		選/ E	
	A05409	高分子加工與物性Polymer Processing and Physical Properties	3		選/ E	
	A05425	生質能源 Bioenergy	3		選/ E	
	A05471	固態化學Solid State Chemistry	3		選/ E	
	A05424	高分子物理Polymer Physics	3		選/ E	
	A05383	生化工程Biochemical Engineering	3		選/ E	
	A05614	分子生物學技術Molecular biotechnology	3		選/ E	
	A05428	化學工業程序Chemical Process Industries	3		選/ E	
	A05446	產品設計與開發Product design and development	3		選/ E	
	A05403	職能與倫理Introduction to Biotechnology	2		選/ E	
	A05408	超臨界流體 Fundamentals of Supercritical Fluids and Its	3		選/ E	
	A05635	天然物分離與應用 Separation and Application of Natural Products	3		選/ E	
	A05665	統計與實驗設計Statistics and Experimental Design	3		選/ E	
	A05379	工業微生物Industrial Microbiology	3		選/ E	
	A05431	專業實習Bioenergy	3		選/ E	
本學年度必修學分數 Total Required credits for this year			7			