

**ARTICULATION SCHEDULE
FOR DUAL DEGREE BACHELOR PROGRAM**

Proposed WMCUS-Taiwan Tech International Dual-Degree Bachelor Program curriculum

Year	1 st		2 nd		3 rd		4 th		
Semester	1	2	3	4	5	6	7	8	
Courses /Credits	[1] Chinese (0)	[8] Chinese (0)	[16] Engineering Mathematics I (3)	[23] Kinetics and Catalyst (4)	[21] Transport Phenomena (3)	[28] Process Control (3)	[33] Process Design (4)	Field Work (new course) (2)	
	[2] English I (3)	[9] English II (3)	[17] Chemical Engineering Principles (Mass and Energy Balance) (4)		[24] Unit Operation I (4)	[29] Unit Operation II (4)			
	[3] Calculus I (4)	[10] Calculus II (4)	[19] Physical Chemistry I (3)		[25] Instrumental Analyses (3)	[30] Reaction Engineering (3)	[34] Seminar I (0)	[37] Seminar II (0)	
	[4] Physics I (3)	[11] Physics II (3)			[26] Chemical Engineering Thermodynamics (4)				
	[5] Chemistry I (3)	[12] Chemistry II (3)				[31] Special Project I (2)	[35] Special Project II (2)	Special Project III (2)	
	[13] Computer Programming (3)	[6] Physics I Lab (2)	[14] Physics II Lab (2)	[20] Industrial Microbiology Lab (2) (= [20]-1 + [20]-2)	[27] Unit Operation & Transport Phenomena Lab I (2)	[32] Unit Operation & Transport Phenomena Lab II (2)	[36] Unit Operation & Transport Phenomena Lab III (2)	[38] Unit Operation & Transport Phenomena Lab IV (2)	
		[7] Chemistry I Lab (2)	[15] Chemistry II Lab (2)						
	[18] Organic Chemistry I (3)	[22] Organic Chemistry II (3)	Industrial Microbiology (2)	Engineering Mathematics II (3)		[43] (Elective) Environmental Engineering II (3)	[44] Chemical Process Industry I (3)		
				Environmental Engineering I (4)			[45] Unit Operation III (4)	Elective (3)	
	Liberal arts and minor in Management								
		Introduction to Management (3)	Introduction to Business (3)	Accounting (3)			Industrial Management (3)	graduate-level English course in School of Management (elective) (3)	
	[39] Liberal Arts (2)(Religion)		[40] Liberal Arts (State Philosophy-Pancasila) (2)	[41] Liberal arts (Social ethics) (2)	Introduction to Chemical Engineering (0)				
				[42] Liberal arts (Philosophy Anthropology) (2)	Physical education. (0)	Physical education.(0)			
Total Credit	21	23	21	20	16	17	18	12	

Total 148 credits

[A] Total required credits:

1. 136 for Chem Eng at Taiwan Tech, plus 20 for minor;
2. 146 at WMCU

[B] Note from the School of Management for the credits in management with Certificate (overall 12 – 15 credits, 4-5 courses)

Year	Course(credits/Required or Elective)	Location
Freshman & Sophomore	<ul style="list-style-type: none">• Introduction to Management (3/R)• Introduction to Business (3/R)• Accounting (3/R)	WMCU
Senior	<ul style="list-style-type: none">• Industrial Management (3 credits)• At least two graduate-level English courses in School of Management (6/E) (Each course has 3 credits)	Taiwan Tech
	Total at least 15 credits	

Note:

- Black: compulsory courses for both Universities (credit hour taking from the maximum required from either University);
- Red: the same courses which might be taken from different year or semester ([23] Kinetics and Catalyst (4) is equivalent to Physical Chemistry II)
- Pink: laboratory works
- Blue: Liberal Arts (通識) and elective courses (at Taiwan Tech, part of elective courses credits (in Chemical Engineering) could be term as liberal arts, to meet the requirement of total 16 credits)
[39]+[40]+[41]+ [42]=8 credits; [43] + [44] +[45] =10 credits, more than the required credits:16 credits.

Course Road Map

Department of Chemical Engineering, Taiwan Tech

○部定必修 (required by Minister of Education)

●校定必修 (required by University)

Freshman (1st)		Freshman (2nd)		Sophomore (1st)		Sophomore (2nd)		Junior (1 st)		Junior (2nd)		Senior (1 st)		Senior (2 nd)	
[1]	○國文(3) Chinese (3)	[8]	○國文(3) Chinese (3)	[16]	○工程數學(3) Engineering Mathematics I	[21]	○單元操作與輸送現象(一)(3) Transport Phenomena	[24]	○單元操作與輸送現象(二)(3) Unit Operation I	[28]	●程序控制(3) Process Control	[33]	○程序設計(3) Process Design		
[2]	○英文(3) English (3)	[9]	○英文(3) English (3)	[17]	○質能均衡 Chemical Engineering Principles (Mass and Energy Balance)			[25]	●儀器分析(3) Instrumental Analyses	[29]	○單元操作與輸送現象(三)(3) Unit Operation II	[44]	化工製造程序(一)(3) Chemical Process Industry I (3)		
	*○英文聽講練習(0)English listening		*○英文實務(0)	[18]	○有機化學 Organic Chemistry I	[22]	○有機化學 Organic Chemistry II	[26]	○化工熱力學(3) Chemical Engineering Thermodynamics	[30]	○反應工程(3) Reaction Engineering	[34]	●專題討論(一) Seminar I	[37]	●專題討論(二) 討論(一) Seminar II
[3]	○微積分(4) Calculus I	[10]	○微積分(4) Calculus II	[19]	○物理化學(3) Physical Chemistry I	[23]	○物理化學(3) Physical Chemistry II			[31]	●實務專題(2) Special Project I	[35]	●實務專題(2) Special Project II		
[4]	○物理(3) Physics I	[11]	○物理(3) Physics II	[20]-1	●化學技術實習(一)(1)	[20]-2	●化學技術實習(二)(1)	[27]	●化學技術實習(三)(1)	[32]	●化學技術實習(四)(1)	[36]	●化學工程實習(一)(1)	[38]	●化學工程實習(二)(1)
[5]	○化學(3) Chemistry I	[12]	○化學(3) Chemistry II							[43]	Environmental Engineering II (3)	[45]	[45] Unit Operation III (4)		
	計算機概論(3) Introduction to Computer	[13]	●計算機語言(3) Computer Programming						●化學工程概論(0) Introduction to Chemical Engineering						
[6]	●物理實習(1) Physics I Lab	[14]	●物理實習(1) Physics II Lab	[40]	○通識課程(2) (2)Liberal arts	[41]	○通識課程(2) Liberal arts	[43]	○共同科目(3)	[44]	共同科目(4)				
[7]	化學實習(1) Chemistry I Lab	[15]	化學實習(1) Chemistry II Lab			[42]	○通識課程(2) Liberal arts			[45]	共同科目(3)				
[39]	○通識課程(2) Liberal arts								體育(0)		體育(0)				

*: can be waived by taking English exam: e.g. TOEIC, TOFEL

Note :

1. The required credits for graduation: WMCU 146 credits, Taiwan Tech: 136 credits
2. The common lecture required 16 credits that the international students could take elective course to fulfill the required credits
3. For dual degree students, Physical Education should be taken for 2 semesters

Taiwan Tech

(1) Chem Eng requires at least Management related lecture.

(2) English course could be waived if passing English tests with specific standard (學校規定的抵免標準如下)。

相當全民英檢抵免 等級標準				課程名稱	修習 學分數	免修或抵免	實得 學分數	適用抵免對象	
中高級 (TOEIC 750)	中級複試 (TOEIC 550)	中級初試	(TOEIC350) 初級複試	基礎英文字彙與閱讀	2	抵免	0	全校四年制學生	
				生活美語	2	抵免	0		
					英文字彙與閱讀 (一)	2	抵免	0	除應外系學生外之各 系四年制學生
					英語口語訓練 (一)	2	抵免	0	
				英文字彙與閱讀 (二)	2	抵免	0		
				英語口語訓練 (二)	2	抵免	2		
					進階英文(一)	2	抵免	2	
					進階英文(二)	2	抵免	2	
			進階英文(三) *需具備相當於 TOEIC 750 分以上之資格方得修課	2	自由選修	2	自由選修		