

Appendix I:

Chulalongkorn University, Faculty of Engineering

Double/Dual Degree Master's Program with National Taiwan University

	Features	NTU-CE	CU-FE
1.	Registration	Unless otherwise agreed by both NTU and CU, in each academic year the student will be required to simultaneously enrol in both Institutions.	
2.	Tuition Fee	During the period of study in the Host University, students must pay the appropriate tuition and miscellaneous fees as required by the Home University and shall be exempt from paying tuition and miscellaneous fees to the Host University.	
3.	Accommodation	NTU provides every necessary assistance in locating accommodation. The application for accommodation should be submitted before the deadline. Students must pay for their own accommodation without additional living subsistence allowance.	Students are guaranteed accommodation at CU I-House, when their application is submitted before the deadline. Students must pay for their own accommodation without additional living subsistence allowance.
4.	English Proficiency Requirements	The minimum English proficiency requirement for the Program is TOEFL PBT 550, iBT 71, or an overall band score of IELTS 5.5. Equivalent CEFR B2 (Vantage) or above qualifications are also acceptable. (Chart I)	The requirement for English proficiency in the Program is a TOEFL iBT scores of 67 or TOEFL PBT score of 500, or an overall band score of 5.5 in IELTS, Equivalent qualifications of CU-TEP 45 or above are acceptable.
5.	Enrollment Requirement	Students must spend at least one academic year of study at the Host University. The maximum period of stay at the Host University must not exceed half of the total period of study.	
6.	Required Credits for Graduation	<p><u>For all Master's Divisions:</u></p> <ul style="list-style-type: none"> ✓ 4 seminars (0 credit) ✓ Thesis (0 credit) <p>Students in all divisions are required to complete 24 credits + 4 seminars + thesis to graduate.</p>	<p><u>For all Master's Divisions:</u></p> <ul style="list-style-type: none"> ✓ 4 seminars (0 credit) ✓ 3 required courses (9 credits) ✓ 5 elective courses (15 credits) ✓ Thesis (12 credits)
		Students must gain a minimum of 1/3 of the total credits required for graduation at the host and 1/3 the at home university.	
7.	Credit Transfer Arrangements	Credit transfer for up to 50% of the Program's required credits is allowed.	

	Features	NTU-CE	CU-FE
8.	Medium of instruction	English	
9.	Supervision	CU and NTU shall jointly appoint a thesis advisor from each Institution. The thesis advisors shall undertake to mutually and fully supervise the thesis and act respectively as the student's research advisor.	
10.	Thesis Assessment	One thesis written in English and an oral examination in English are sufficient to fulfill the requirements for both NTU and CU.	
		Students need to submit 2 copies of printed theses to NTU library.	Students need to submit 1 copy of printed thesis to Graduate School.
11.	Publication Requirement	The requirement for publication is subject to the mutual agreements between the co-supervisors at NTU-CE and CU-FE.	
12.	Panel of Examiners	The student must fulfill requirements set by the NTU-CE and CU-FE thesis committee, which must include at least one faculty member from NTU-CE and at least one faculty member from CU-FE.	

Chart 1: English Proficiency Test Comparison

英語主要檢測參考對照表 English Proficiency Test Comparison Chart								
CEFR Level 語言能力 參考指標 (註 1)	CEFR Level Description 能力等級之綜合說明	托福 TOEFL (iBT)	托福 TOEFL (CBT)	雅思 IELTS	多益測驗 TOEIC	全民英檢 GEPT	劍橋大學英語能力 認證分級測驗 (Cambridge Main Suite)	劍橋大學 國際商務 英語能力 測驗 (BULATS)
A2(基礎級) Waystage	Can understand sentences and frequently used expressions related to areas of most immediate relevance (e.g. very basic personal and family information, shopping, local geography, employment). Can communicate in simple and routine tasks requiring a simple and direct exchange of information on familiar and routine matters. Can describe in simple terms aspects of his/her background, immediate environment and matters in areas of immediate need.	29	90	3	350	初級 (Elementary)	Key English Test (KET)	ALTE Level 1
B1(進階級) Threshold	Can understand the main points of clear standard input on familiar matters regularly encountered in work, school, leisure, etc. Can deal with most situations likely to arise whilst travelling in an area where the language is spoken. Can produce simple connected text on topics, which are familiar, or of personal interest. Can describe experiences and events, dreams, hopes & ambitions and briefly give reasons and explanations for opinions and plans.	47	137	4	550	中級 (Intermediate)	Preliminary English Test (PET)	ALTE Level 2
B2(高階級) Vantage	Can understand the main ideas of complex text on both concrete and abstract topics, including technical discussions in his/her field of specialization. Can interact with a degree of fluency and spontaneity that makes regular interaction with native speakers quite possible without strain for either party. Can produce clear, detailed text on a wide range of subjects and explain a viewpoint on a topical issue giving the advantages and disadvantages of various options.	71	197	5.5	750	中高級 (High-Intermediate)	First Certificate in English (FCE)	ALTE Level 3
C1(流利級) Effective Operational Proficiency	Can understand a wide range of demanding, longer texts, and recognize implicit meaning. Can express him/ herself fluently and spontaneously without much obvious searching for expressions. Can use language flexibly and effectively for social, academic and professional purposes. Can produce clear, well-structured, detailed text on complex subjects, showing controlled use of organizational patterns, connectors and cohesive devices.	83	220	6.5	880	高級 (Advanced)	Certificate in Advanced English (CAE)	ALTE Level 4
C2(精通級) Mastery	Can understand with ease virtually everything heard or read. Can summarize information from different spoken and written sources, reconstructing arguments and accounts in a coherent presentation. Can express him/herself spontaneously, very fluently and precisely, differentiating finer shades of meaning even in more complex situations.	109	267	7.5	950	優級 (Superior)	Certificate of Proficiency in English (CPE)	ALTE Level 5

註 1: 「歐洲語言學習、教學、評量共同參考架構」(Common European Framework of Reference for Languages: Learning, Teaching, Assessment, CEFR)，是全世界唯一國際通用之歐盟語言能力指標。由歐洲議會於 1996 年公布，目前有 40 多個國家採用。

註 2: 本表係參考行政院 95 年 4 月 4 日院授人字第 0950061619 號函修正之「公務人員英語檢測陞任評分計分標準對照表」、財團法人語言測驗中心辦理之各項英語測驗與 CEF 參考架構、托福網站分數對照表、多益測驗與 CEF 分數對照表與劍橋英語認證測驗與歐洲共同語言能力分級架構對照編製而成。

Appendix II:

SATISFICATION OF COURSE REQUIREMENTS OF DEPARTMENT OF CIVIL ENGINEERING OF CU AND DEPARTMENT OF CIVIL ENGINEERING OF NTU

II-1 Structural Engineering Division

	Courses offered by NTU	R/E*	Cr.**	Courses offered by CU	R/E*	Cr.
1	Advanced Structural Theory	R	3	Advanced Structural Theory	R	3
2	Theory of Elasticity (I)	R	3			
				Introduction to Solid Mechanics	R	3
3	Advanced Concrete Theory	R	3	Advanced Concrete Technology	E	3
4	Structural Dynamics	R	3	Dynamics of Structures <u>or</u> Dynamics and Vibrations	E	3
5	Method of Finite Elements	R	3	Finite Element Method for Civil Engineers	E	3
6	Seismic Design of Steel Structures	E	3	Seismic Design of Structures	E	3
7	Behavior of Reinforced Concrete Structure	E	3	Behavior of Reinforced Concrete Structures	E	3
8	Theory of Plasticity	R	3	Special Topics in Structural Engineering I and/or Special Topics in Structural Engineering II	E	3
	Structural Safety and Reliability Analysis	E	3			
	Sky Classroom: Global Team Project	E	3			
	Fundamental Design and Manufacture of Fiber-Reinforced-Polymer (FRP) Composites	E	3			
	Bridge Engineering	E	3			
	Structural Control (I)	E	3			
	Composite Materials and Structures	E	3			
	Signal Processing and Spectral Analysis	E	3			
	Plastic Analysis and Design	E	3			
9				Applied Mathematics I	E	3

* Required Course or Elective Course.

** Credits.

***Note: NTU students must take 4 out of the following 6 core courses with a grade of C- or above: Advanced Structural Theory, Structural Dynamics, Method of Finite Elements, Theory of Plasticity, Advanced Concrete Theory, and Theory of Elasticity(I).

II-2 Geotechnical Engineering Division

	Courses offered by NTU	R/E*	Cr.	Courses offered by CU	R/E*	Cr.
1**	Foundation Design and Analysis	E	3	Foundation Engineering	R	3
	Deep Excavation Analysis and Design	E	3			
2	Intermediate Soil Mechanics	E	3	Advanced Soil Mechanics	R	3
3**	Slope Stability	E	3	Earth and Retaining Structures	R	3
	Application of Geosynthetics	E	3			
4**	Constitutive Law of Geomaterials	E	3	Elasticity in Soil Mechanics	E	3
5	Application of Geosynthetics	E	3	Engineering Ground Modification	E	3
6	Numerical Method in Geotechnical Engineering	E	3	Finite Element Method in Geotechnical Engineering	E	3
7**	Soil Dynamics and Foundation Vibration	E	3	Soil Dynamics and Earthquake Engineering	E	3
	Geotechnical Earthquake Engineering	E	3			
8	Rock Mechanics	E	3	Rock Mechanics	E	3
9	Foundation Design and Analysis	E	3	Deep Foundation Design	E	3
10	Geotechnical Engineering Practice	E	3	Special Study in Soil Engineering	E	3

* Required Course or Elective Course.

** **Any** course in the list is equivalent to the course offered by the counterpart.

II-3 Transportation Engineering Division

	Courses offered by NTU	R/E ¹	Cr.	Courses offered by CU	R/E	Cr.
1	Urban Transportation Planning	E	3	Transportation Systems	R	3
				Urban Transportation Planning	E	3
				Transportation Planning and Policy	E	3
				Transport Policy	E	3
2	Operation Research	E	3	Methodology Research in Transportation*	R	3
				Impact Analysis of Transportation and Logistics System*	E	3
				Statistical Methods for Transportation Analysis	E	3
				Transportation and Logistics Infrastructures*	E	3
3	Asphalt Concrete and the Mix Design	E	3	Pavement Design	E	3
	Pavement Design and Management	E	3			
4	Mass Rapid Transit System Engineering	E	3	Public Transit Systems Planning and Operations	E	3
5	Traveler Behavior Analysis	E	3	Travel Behavior Survey and Analysis	E	3
6	Green Mobility and Sustainable Development	E	3	Sustainable Transportation	E	3
7	Railway Operations and Management	E	3	Rail Transport System	E	3
8	Optimization Models and Methods for Transportation	E	3	Computer Model in Transportation	E	3
9	Theory of Traffic Guidance Control	E	3	Transportation Operations	E	3
11	Managing Transportation System Innovation	E	3	Intelligent Transportation Systems	E	3
12	Special Topics in Transportation Economics	E	3	Evaluation of Transportation Project and Policy	E	3

¹ A student must pass courses from at least four different full-time professors in the transportation division.

13	Intelligent Transport System Platform Design	E	3	Traffic Modeling and Simulation	E	3
				Traffic Simulation	E	3
14	Traffic Measurement Control	E	3	Traffic Engineering	E	3
				Fundamentals of Road Safety	E	3
15	Railroad Transportation Engineering	E	3	Rail Transport System	E	3
16	Track Engineering	E	3	Railway Track Engineering	E	3
				Train-Track Interaction	E	3
	High Speed Rail Engineering	E	3			
17	Special Topics in Transportation Engineering	E	3	Transportation and Logistics System Optimization	E	3
				Logistics System Analysis	E	3
				Advanced Transportation and Logistics System Optimization	E	3
				Probability Statistics and Decision for Civil Engineering	E	3
				Air Transportation System	E	3
				Planning and Management of Airport System	E	3
				Special Studies in Transportation Engineering	E	3

Appendix III:

THE GRADING SYSTEMS OF CU AND NTU FOR CREDIT TRANSFER

The host institution will provide the home institution with an adequate record of the DD Program student's academic performance within one month of the end of the relevant term.

Grading will be applied according to the system used by each host institution. The transferable grading systems are as shown below:

CU			NTU		
Grade	Definition	Grade Points	Grade	Definition	Grade Points
A	<i>Excellent.</i> Thorough knowledge and mastery of concepts and/or techniques together with a high degree of skill and/or great originality in satisfying the requirements of a piece of work or course.	4.00	A+	All goals achieved beyond expectation	4.3
			A	All goals achieved	4.0
B+	<i>Very Good.</i> Thorough knowledge and mastery of concepts and/or techniques together with a fairly high degree of skill in the use of those concepts and techniques in satisfying the requirements of a piece of work or course.	3.50	A-	All goals achieved, but need some polish	3.7
			B+	Some goals well achieved	3.3
B	<i>Good.</i> Good level of knowledge or mastery of concepts and/or techniques with a considerable skill in using them in satisfying the requirements of a piece of work or course.	3.00	B	Some goals adequately achieved	3.0
			B-	Some goals achieved with minor flaws	2.7

Credit Transfer Eligibility

Credits are transferable between two institutions provided that students obtain minimum passing grade of respective institutions.

NTU Grade	CU Grade	Credit Transferable
A+	A	Transferable
A		
A-	B+	
B+		
B	B	
B-		
C+	C+	Not Transferable
C	C	
C-	D	
F	F	
	I	