

# NTU Civil Engineering Department Undergraduate Course List (Fall Semester 2021)

2021.08.16 update

NTU Civil Engineering Department Course Framework (since Fall Semester 2018)	
Criteria A - General courses	12
Criteria B - Liberal Education	12
Criteria C - Departmental required general courses	12
Criteria D - Departmental required professional courses	50
Criteria E - Field specialized required courses	14
Criteria F - Divided into six groups. Undergraduate students should choose one group and fulfill the group's credit requirement.	12
Criteria G - Field specialized elective courses (i.e. curriculum number is 501 or 521)	12
Criteria H - Free-elective courses	8
The least credits for graduation	132

### Criteria A (12 credits) - General courses

Course Title	Credits
Chinese (I) (II) / 國文領域	6
Foreign language (I) (II) / 外文領域	6

### Criteria B (12 credits) - Liberal Education

### Criteria C (12 credits) - Departmental required general courses

Course Title	Recommended Study Semester	Credits
Calculus (general mathematics) (1) / 微積分1	Year 1, Fall	2
Calculus (general mathematics) (2) / 微積分2	Year 1, Fall	2
Calculus (general mathematics) (3) / 微積分3	Year 1, Spring	2
Calculus (general mathematics) (4) / 微積分4	Year 1, Spring	2
General Physics (b)	Year 2, Fall	3
General physics lab	Year 2, Fall	1

### Criteria D (50 credits) - Departmental required courses

Curriculum Number	Course Title	Recommended Study Semester	Credits
501 10520	Conceptual Design Studio / 土木工程概念設計	Study Semester	2
501 10600	Engineering Graphics / 工程圖學	Year 1, Fall	2
501 10710	Physical Model Design Laboratory / 土木工程基本實作	Year 1, Spring	2
501 17010	Surveying (I) / 測量學一	Year 1, Fall	2
501 27120	Surveying Practice / 測量實習	Year 1, Fall	1
501 10800	Computer Programming / 計算機程式	Year 1, Spring	3
501 11010	Applied Mechanics 1 / 應用力學1	Year 1, Fall	2
501 11020	Applied Mechanics 2 / 應用力學2	Year 1, Spring	2
501 12010	Engineering Mathematics 1 / 工程數學1	Year 1, Fall	2
501 12020	Engineering Mathematics 2 / 工程數學2	Year 1, Spring	2
501 22010	Engineering Mathematics 3 / 工程數學3	Year 2, Fall	2
501 21210	Mechanics of Materials / 材料力學	Year 2, Fall	4
501 23000	Fluid Mechanics / 流體力學	Year 2, Spring	3
501 23200	Engineering Statistics / 工程統計學	Year 2, Fall	3
501 23300	Engineering Material and Soil Mechanics Lab / 工程材料學與土壤力學實驗	Year 2, Spring	1
501 27900	Engineering Material / 工程材料學	Year 2, Spring	2
501 36000	Soil Mechanics / 土壤力學	Year 2, Spring	3
501 32060	Structural Theory and Fluid Mechanics Lab / 結構學與流體力學實驗	Year 3, Fall	1
501 32320	Reinforced Concrete / 鋼筋混凝土學	Year 3, Fall	3
501 32900	Hydrology / 水文學	Year 3, Fall	3
501 35700	Engineering Economics / 工程經濟	Year 3, Spring	2
501 34130	Civil Engineering Capstone Challenge / 土木工程設計實務	Year 3 or 4	3

### Criteria E (14 credits) - Field specialized required courses

Curriculum Number	Course Title	Recommended Study Semester	Credits
501 25010	Transportation Engineering / 運輸工程	Year 2, Fall	3
501 32410	Structural Theory (I) / 結構學一	Year 2, Spring	3
501 36210	Foundation Engineering / 基礎工程	Year 3, Fall	3
501 33360	Hydraulic Engineering / 水利工程	Year 3, Spring	2
501 37800	Construction Management / 營建管理	Year 3, Spring	3

Since year 2009, F-courses are divided into six groups: Criteria F-1 (Civil Engineering Group), Criteria F-2 (Railway Engineering Group), Criteria F-3 (Architectural Engineering Group), Criteria F-4 (Environmental Engineering Group), Criteria F-5 (Natural Disaster Prevention Group), and Criteria F-6 (Wood Construction Group). Undergraduate students should choose one group and fulfill the group's credit requirement.

### Criteria F-1 (12 credits, Civil Engineering Group) - Take 4 courses

Curriculum Number	Course Title	Credits	Remarks
501 25020	Transportation Systems / 運輸系統	3	
521 U9000	Water Resources Engineering / 水資源工程	3	
501 38080	Engineering and Law / 工程與法律	3	Count as only 1 course taken
521 U9240	Construction Engineering / 施工學	3	
501 39960	Engineering Geology and its Applications / 工程地質與應用	3	
501 40200	Design of Steel Structure / 鋼結構設計	3	
501 49640	Introduction of Seismic Design of Structures / 結構耐震設計導論	3	Count as only 2 courses taken
501 42100	Prestressed Concrete / 預力混凝土	3	
521 U3830	Introduction to Surveying and Geomatics / 測量及空間資訊概論	3	
521 U3190	Object-Oriented Programming / 物件導向程式語言	3	
521 U9230	Introduction to Machine Learning and Deep Learning / 機器學習與深度學習導論	3	Count as only 1 course taken
521 U9270	Computational Statistics for Data Analytics / 數據分析之計算統計學	3	

### Criteria F-2 (Railway Engineering Group) - Take 4 courses

Curriculum Number	Course Title	Credits	Remarks
521 U8770	Railroad Transportation Engineering / 軌道運輸學	3	Required for F-2
501 25020	Transportation Systems / 運輸系統	3	Required for F-2; take 1 out of 3 courses
521 U8900	Automation and Robotics / 自動化和機器人技術	3	
521 U9170	Fundamental Electrical Engineering / 電工學與實習	3	
521 U3710	Track Engineering / 軌道工程	3	Take 2 out of 5 courses
521 U3840	Railway Operations and Management / 軌道營運與管理	3	
521 U8910	Mass Rapid Transit System Engineering / 捷運系統工程	3	
521 U8810	High Speed Rail Engineering / 高速鐵路工程	3	
521 U8390	Light Rail Transit System Engineering / 輕軌運輸系統工程	3	

### Criteria F-3 (Architectural Engineering Group) - Minimum requirement: 12 credits

Curriculum Number	Course Title	Credits	Remarks
501 34250	Introduction to Architecture / 建築導論	3	
501 39400	Human Environment Relations / 人與環境關係導論	3	
521 U9140	Fundamentals of Architectural Design / 空間設計入門	3	Required for F-3
501 39110	Architectural Design (1) / 建築設計(一)	4	
501 39120	Architectural Design (2) / 建築設計(二)	4	
AD1101301 (NTUST)	Architectural Design (1) / 建築設計(一)	3	
AD1102301 (NTUST)	Architectural Design (2) / 建築設計(二)	3	
544 M4760	Architectural Programming and Design Guidelines / 建築計畫與設計準則	3	
521 U9060	Building Physics and Sustainable Design / 建築物理與永續設計	3	
544 U1770	Behavior and System of Architectural Structure / 建築結構行為與系統	3	

### Criteria F-4 (Environmental Engineering Group) - Take 4 courses

Curriculum Number	Course Title	Credits	Remarks
541 U0120	Introduction to Environmental Engineering / 環境工程概論	3	Required for F-4
541 U0180	Water Supply and Sewerage / 自來水及下水道工程	3	Required for F-4; take 1 out of 2 courses
541 U0190	Water and Wastewater Treatment / 自來水及污水處理工程	3	
541 M0210	Environmental Chemistry / 環境化學	3	
541 M0460	Environmental Policy and Management / 環境政策與管理	3	
541 M0690	Water Pollution Control / 水污染防治	3	
541 M4050	Environmental Planning and Management / 環境規劃與管理	3	
541 M1740	Introduction to Ecological Methods / 生態工法概論	3	
541 M0680	Introduction to Air Pollution / 空氣污染概論	3	

### Criteria F-5 (Natural Disaster Prevention Group) - Take 4 courses

Curriculum Number	Course Title	Credits	Remarks
521 U3420	Disaster Management and Civil Engineering / 災難管理與土木工程	3	Required for F-5
501 39960	Engineering Geology and its Applications / 工程地質與應用	3	Take 3 out of 7 courses
521 U3860	Rock Slope Engineering / 岩石邊坡工程	3	
521 U9180	Water Related Disasters, Lessons and Prevention / 水利災害案例與防治	3	
501 49640	Introduction of Seismic Design of Structures / 結構耐震設計導論	3	
544 M3850	Disaster Reduction Planning / 城鄉安全與防災	3	
521 U3830	Introduction to Surveying and Geomatics / 測量及空間資訊概論	3	
521 U3850	Introduction to Geographic Information Systems / 地理資訊系統概論	3	

### Criteria F-6 (Wood Construction Group) - Minimum requirement: 12 credits

Curriculum Number	Course Title	Credits	Remarks
501 49660	Wooden Structure Design / 木構造設計	3	Required for F-6
605 30350	Introduction to Traditional Wood Structures in Taiwan / 台灣傳統木建築概論	3	Take 3 out of 6 courses
625 U1710	Design and Construction of Wood Structures (I) / 木質構造建築設計與施工一	3	
626 U1720	Design and Construction of Wood Structures (II) / 木質構造建築設計與施工二	3	
109 10800	Stage Craft (I) / 舞台技術一	2	
501 32240	Structural Systems for Civil Engineering / 土木結構系統	3	
501 40200	Design of Steel Structure / 鋼結構設計	3	