國立暨南國際大學 土木工程 學系學士班必選修科目一覽表 Undergraduate Program Course Catalog of Department of Civil Engineering ,National Chi Nan University

本表(112)學年度入學新生適用 Effective for students admitted in Fall,2023

最低畢業學分：132學分，全校共同課程 15 學分，通識領域課程 16 學分，系必修 73學分，選修28學分。 Undergraduate requirements: a minimum of 132 required credits, including 15credits in the school-wide curriculum, 16 credits of General Education courses, 73 credits of Departmental required courses and 28 credits of elective courses.

壹、全校共同課程 1.School-Wide Curriculum

一、共同課程(必修15學分) A. School-Wide Required Courses (15 credits)

課程代號 Course Code	課 程 名 稱(中文及英文) Course Name (Chinese and English)	學分數 Credits	備 註Notes
	英文一(上) English I(1)	2	自110學年度起，英文能力分班改為依照本校自辦英檢(OOPT)作依據，分為三級上課：前10%的同學將分配至「進階班英文」上課；中間80%的同學將分配至原班英文上課；後10%的同學將分配至「基礎班英文」上課。Since the first semester of 110 Academic Year (September2021), the competence-based class grouping policy of Freshmen English (Course Title: English 1) will be based on registered student’s OOPT scores; Students will be accordingly divided into three different levels: Advanced English (top 10%), General English (middle 80%) and Basic English (bottom 10%).
	英文一(下) English I(2)	2	
	英文二 English II	2	
	中文思辨與表達一：閱讀書寫 Critical Thinking and Expression in Chinese （Ⅰ）：Reading And Writing	2	僑外生得以修習「僑外生華語文」抵免「中文思辨與表達」課程。(Overseas students are allowed to take the course ’Chinese for Overseas Students’ as an exemption for the course ’Critical Thinking and Expression in Chinese’.)
	中文思辨與表達二：多元應用 Critical Thinking and Expression in Chinese（Ⅱ）：Multiple Applications	2	
	社會服務學習(上) Service Learning(1)	1	依所屬學系分班上課，無特殊原因不得跨班選課。(Students are divided into groups by their own department, without any proper reasons they cannot change the decision.)
	社會服務學習(下) Service Learning(2)	1	
	大一體育(上)Physical Education (1)	0.5	上學期依所屬學系分班上課，無特殊原因不得跨班選課，惟未達40人之學系、院學士班班級，則採合併班開課；下學期則依運動項目分班，自由選課。(In the first semester of freshman, students are arranged to take Physical Education (1) by their original department. Without any proper reasons, change will be prohibited. If a class of the department or the interdisciplinary program that is less than 40 students, the combined class will be adopted. In the second semester of freshman, studetns are able to take Physical Education (2) by their interesting.)
	大一體育(下)Physical Education (2)	0.5	
	特色運動 (Featured Sports)	2	大二開始，每學期限修一項，畢業前須完成至少2項特色運動(Students are limited take one course each semester since Sophomore,At least 2 featured sports courses are required before graduation.)

通識講座　General Education Seminar	0	畢業前至少應出席6場。（Students are required to attend at least 6 lectures before graduation.）

二、共同選修課程（**各系依共同選修加列課程**）B. School-Wide Elective Courses

	第二外語　（Second Foreign Languages）	含日文、韓文、法文、德文及西班牙文等。**(Including Japanese, Korean, French, German and Spanish, etc.)**
	東南亞語言(Southeast Asia Languages)	含泰語、越南語、緬甸語、印尼語及馬來語，可抵特色通識「國際連結」次領域。(Including Thai, Vietnamese, Burmese, Indonesian and Malay. These courses can be credited course credits in International Connection of Characteristic
	進階語文(Advanced English)	
	其他選修(Other Elective Course)	

貳、通識領域課程(至少16學分) 2.General Education Courses

主領域 Main Field	次領域 Sub-Field	學分數 Credits	備　　註　Notes
人文領域 Humanities	文學與藝術(Literature and Art)	4	至少修習4學分。(take at least 4 credits)
	歷史哲學與文化(History, Philosophy and Culture)		
社會領域 Society	法政與教育(Law, Politics and Education)	4	至少修習4學分。(take at least 4 credits)
	社經與管理(Society, Economy and Management)		
自然領域 Nature	工程與科技(Engineering and Technology)	4	至少修習4學分。(take at least 4 credits)
	生命與科學(Life and Science)		
特色通識領域 Characteristic General Education	國際連結(International Connection)(東南亞 Southeast Asia)	4	至少修習4學分。(take at least 4 credits)
	淨零永續(Net-Zero Sustainability)(綠概念Green Concept)		
	社會創新(Social Innovation)(在地實踐Social Practice)		

通識各主領域課程(人文、社會、自然及特色通識)得單一領域跨域認抵，至多4學分（需經通識教育中心認定之）
General education courses from various fields (humanities, society, nature, and characteristic general education) can be recognized across fields. A maximum of 4 credits is admitted in a single field. It must be approved by the General Education Center.

參、學系專業課程 3.Departmental Courses

課程代號 Course Code	課 程 名 稱(中文及英文) Course Name (Chinese and English)	學分數 Credits	修別Course type (required/elective)	開課年級 Course availability (freshman/sophomore/junior/senior)	備　　註Notes
220108	微積分(上)Calculus(1)	3	必 required	一上 Freshman 1st Semester	
220112	微積分(下)Calculus(2)	3	必 required	一下 Freshman 2nd Semester	
220142	普通物理General Physics	3	必 required	一上 Freshman 1st Semester	

220067	普通物理實驗 Laboratory for General Physics	1	必 required	一下 Freshman 2nd Semester	
220141	土木工程概論Introduction to Civil Engineering	1	必 required	一上 Freshman 1st Semester	
220049	計算機程式Computer Program	3	必 required		
220078	工程圖學Engineering Graphics	1	必 required	一下 Freshman 2nd Semester	
220033	靜力學Engineeing Mechanics-Statics	3	必 required	一下 Freshman 2nd Semester	
220109	測量學Surveying	2	必 required	一下 Freshman 2nd Semester	
220110	測量實習Surveying	1	必 required	一下 Freshman 2nd Semester	
220113	機率與統計Probability and Statistics	3	必 required	一上 Freshman 1st Semester	
220017	工程數學(上)Engineering Mathematics(1)	3	必 required	二上 Sophomore 1st Semester	
220027	工程數學(下)Engineering Mathematics(2)	3	必 required	二下 Sophomore 2nd Semester	
220019	材料力學Mechanics of Materials	3	必 required	二上 Sophomore 1st Semester	先修課程:靜力學 Prerequisite Course: Engineeing Mechanics-Statics

220030	流體力學Fluid Mechanics	3	必 required	二下 Sophomore 2nd Semester	
220029	結構學Elementary Structures	3	必 required	二下 Sophomore 2nd Semester	先修課程:材料力學 Prerequisite Course: Mechanics of Materials
220084	運輸工程Transportation Engineering	3	必 required	二上 Sophomore 1st Semester	
220036	土壤力學Soil Mechanics	3	必 required	二下 Sophomore 2nd Semester	
220090	水處理工程Water and Wastewater Treatment Engineering	3	必 required	二上 Sophomore 1st Semester	
220099	環境工程Environmental Engineering	3	必 required	二下 Sophomore 2nd Semester	
220085	工程材料Engineering Materials	3	必 required	二下 Sophomore 2nd Semester	
220038	鋼筋混凝土學Design of Concrete Structures	3	必 required	三上 Junior 1st Semester	
220087	基礎工程Principles of Foundation Engineering	3	必 required	三上 Junior 1st Semester	先修課程:土壤力學 Prerequisite Course: Soil Mechanics
220037	水文學Hydrology	3	必 required	三上 Junior 1st Semester	
220053	水利工程Hydraulic Engineering	3	必 required	三下 Junior 2nd Semester	

220145	土木工程設計實作Civil Engineering Capstone Challenge	3	必 required	三下 Junior 2nd Semester	
220041	土木工程實驗(一)Civil Engineering Laboratory I	2	必 required	三上 Junior 1st Semester	先修課程:材料力學,結構學 Prerequisite Course: Mechanics of Materials, Elementary Structures
220079	土木工程實驗(二)Civil Engineering Laboratory II	2	必 required	三下 Junior 2nd Semester	先修課程:流體力學,土壤力學 Prerequisite Course: Fluid Mechanics, Soil Mechanics
選 elective修28學分 28credits of elective courses					
220129	基礎化學General Chemistry	3	選 elective	一 Freshman	
220068	普通化學實驗Laboratory for General Chemis	1	選 elective	一 Freshman	
220115	專案管理與應用Project Management and Its Applications	3	選 elective	一 Freshman	
220123	地震與防災Earthquakes 、Disasters and Protection	3	選 elective	一 Freshman	
220127	地球的氣候變遷與環境變化The Variation of Earth Climate and Environment	3	選 elective	一 Freshman	
220130	營建法規construction codes and regulation	3	選 elective	一 Freshman	
220071	專題研究(一)Special Study 1	1	選 elective	二 Sophomore	
220077	專題研究(二)Special Research II	1	選 elective	二 Sophomore	
220116	電腦程式應用Computer Programming and Application	3	選 elective	二 Sophomore	
220018	動力學Dynamics	3	選 elective	二 Sophomore	
220111	電腦與工程問題解決導論Introduction to Computers & Problem Solving	3	選 elective	二 Sophomore	
220031	工程經濟Engineering Economics	3	選 elective	二 Sophomore	
220086	生態工程導論Introduction to Ecological Engineering	3	選 elective	二 Sophomore	
220073	水土保持工程規劃與設計Planning and Design of Soil-Water Conservation Engineering	3	選 elective	二 Sophomore	
220124	統計學與資料分析於交通工程之應用Applied statistic and data analysis in transportation engineering	2	選 elective	二 Sophomore	
220093	生態工法規劃與設計Planning and Design of Eco-engineering Technology	3	選 elective	二 Sophomore	
220128	運輸學Transportation	2	選 elective	二 Sophomore	
220107	生態工法施工與管理Working、Management and Estimation of Eco-engineering Technology	3	選 elective	二 Sophomore	
220133	災害防救概論Introduction to Disaster Mitigation	3	選 elective	二 Sophomore	
220143	智慧運輸系統資料探索Intelligent transportation system data exploration	3	選 elective	二 Sophomore	

220091	專題研究(三)Special Research III	1	選 elective	三 Junior	
220097	專題研究(四)Special Research IV	1	選 elective	三 Junior	
220122	管理科學Management Science	3	選 elective	三 Junior	
220117	電腦結構設計與實務Practicing Computerized Structural Design	3	選 elective	三 Junior	
220055	中等土壤力學Advanced Soil Mechanics	3	選 elective	三 Junior	
220102	工程地質與實習Engineering Geology and Field Training	3	選 elective	三 Junior	先修課程:土壤力學 Prerequisite Course: Soil Mechanics
220118	工程實務專題Civil Engineering Practice	3	選 elective	三 Junior	
220081	水土保持與植生Soil-Water Conservation and Vegetation	3	選 elective	三 Junior	
220131	結構矩陣法Structural Matrix Method	3	選 elective	三 Junior	
220132	施工法Construction Methods	3	選 elective	三 Junior	
220134	營建工程管理Construction Engineering Management	3	選 elective	三 Junior	
220135	專業實習Specialized Internship	3	選 elective	三 Junior	
220140	工程估價Construction Estimate	3	選 elective	三 Junior	
220144	運輸系統導論Introduction to Transportation Systems	2	選 elective	三 Junior	
220101	專題研究(五)Special Research V	1	選 elective	四 Senior	
220106	專題研究(六)Special Research VI	1	選 elective	四 Senior	
220136	企業實習Enterprise Internship	6	選 elective	四 Senior	
220147	土壤動力學 Soil Dynamics	3	選 elective	四 Senior	
220148	邊坡穩定設計與分析 Slope Stability	3	選 elective	四 Senior	
220149	地理資訊系統 Geographic Information Systems	3	選 elective	四 Senior	
220150	遙感探測理論與實習 Remote Sensing Theory and Practice	3	選 elective	四 Senior	
220151	岩石力學 Rock Mechanics	3	選 elective	四 Senior	
220152	高等工程數學(二) Advanced Engineering Mathematics(IV)	3	選 elective	三 Junior	
220153	材料機械行為 Mechanical Behavior of Materials	3	選 elective	四 Senior	
220154	複合材料力學 Mechanics of Composite Materials	3	選 elective	三 Junior	
220155	高等材料力學 Advanced Mechanics of Materials	3	選 elective	三 Junior	
220156	高等運輸規劃 Advanced Transportation Planning	3	選 elective	三 Junior	
220157	鋼結構設計 Structural Steel Design	3	選 elective	四 Senior	
220158	數值分析 Numerical Analysis	3	選 elective	三 Junior	
220065	結構動力學 Structural Dynamics	3	選 elective	三 Junior	
220160	高等結構學 Advanced Structural Analysis	3	選 elective	三 Junior	
220161	實驗力學 Experimental Mechanics	3	選 elective	三 Junior	
220162	振動力學 Engineering Vibrations	3	選 elective	三 Junior	
220163	地震工程學特論 Special Topics in Earthquake Eigineering	3	選 elective	三 Junior	

220164	有限元素法 Finite Element Methods in Mechanics	3	選 elective	三 Junior	
220165	彈性力學 Theory of Elasticity	3	選 elective	三 Junior	
220166	高等有限元素法 Advanced Finite Element Methods in Mechanics	3	選 elective	四 Senior	
220167	高等工程數學(一) Advanced Engineering Mathematics(I)	3	選 elective	三 Junior	
220168	計算材料科學 Computation materials science	3	選 elective	四 Senior	
220169	有限元素結構分析 Finite Element Method for Structural Analysis	3	選 elective	三 Junior	
220170	微觀力學 Micromechanics	3	選 elective	四 Senior	
220171	應用力學特論 Special Topics on Applied Mechanics	3	選 elective	四 Senior	
220172	行動應用程式開發 Developments of Android Apps	3	選 elective	二 Sophomore	
220173	明渠水力學 Open Channel Flow	3	選 elective	二 Sophomore	
220174	計算流體力學 Computational Fluid Dynamics	3	選 elective	二 Sophomore	
220175	水利計算模式 Hydraulic Models	3	選 elective	二 Sophomore	
220056	作業研究 Operations Research	3	選 elective	三 Junior	
220177	系統工程最佳化 System Engineering Optimization	3	選 elective	三 Junior	
220178	運輸系統分析 Transportation Systems Analysis	3	選 elective	三 Junior	
220179	數學規劃 Mathematical Programming	3	選 elective	三 Junior	
220180	運輸管理 Transportation Management	3	選 elective	三 Junior	
220122	管理科學 Management Science	3	選 elective	三 Junior	
220182	運輸與物流分析方法 Research Methods in Transportation and Logistics Analysis	3	選 elective	四 Senior	
220183	高等運輸網路分析 Advanced Transportation Network Analysis	3	選 elective	四 Senior	
220184	演化式計算與運輸分析 Evolutionary Computation and Transportation Analysis	3	選 elective	四 Senior	
220185	科技簡報 Technical Presentation	3	選 elective	三 Junior	
220186	結構力學導論 Introduction of Structural Mechanics	3	選 elective	三 Junior	
220187	高等有限元素法 Advanced Finite Element Methods in Mechanics	3	選 elective	四 Senior	
220188	材料機械行為 Mechanical Behavior of Materials	3	選 elective	四 Senior	
220189	結構力學特論 Special Topics on Structural Mechanics	3	選 elective	四 Senior	
220190	低碳工程設計與應用 Designs and Applications of Low-carbon Engineering	3	選 elective	三 Junior	
220191	工程圖學實作 Engineering Graphics Practice	2	選 elective	一 Freshman	
220192	職業安全衛生管理系統 Occupational Safety and Health Management System	3	選 elective	三 Junior	
220193	中等材料力學 Intermediate Mechanics of Materials	3	選 elective	三 Junior	
220194	水土保持工程 Soil and Water Conservation Engineering	3	選 elective	三 Junior	

填表人：　　系(所)主管：　　院長：　　填表日期：