

# **Discipline Introduction of 2023 Tianjin University Youth of Excellence Scheme of China Program Chinese Government Scholarship**

In order to cultivate international skilled people with board international perspectives, extraordinary qualities, outstanding leadership and cross-culture background, Tianjin University undertakes the Youth of Excellence Scheme of China Program Chinese Government Scholarship Program which includes 2 English-taught majors for master degree:

1. "the Belt and Road" Excellence Talents Cultivation Program in Civil Engineering (Civil Engineering)
2. "the Belt and Road" Excellence Talents Cultivation Program in Chemical Engineering (Chemical Engineering)

## **I. Tianjin University "the Belt and Road" Excellence Talents Cultivation in Civil Engineering Program**

### **1. Discipline Introduction**

The discipline of Civil Engineering in Tianjin University, as the brand major, is the national "985" and "211" key construction discipline and the Tianjin key discipline. It is one of the first batch of doctoral and master degree awarding units approved by the Academic Degrees Committee of the State Council, and has set up the Post-doctoral Mobile station of Civil Engineering. In 1997, it passed the assessment of the British JBM, and was recognized by the Commonwealth and the European Union countries. In the fourth round of discipline evaluation by the Ministry of Education of China, Civil Engineering won the A-level. The discipline of Civil Engineering has the National Engineering Laboratory for Digital Construction and Evaluation Technology of Urban Rail Transit, Key Laboratory of Binhai Civil Engineering Structure and Safety under the supervision of the Ministry of Education of China, Tianjin Key

Laboratory of Civil Engineering Construction and New Materials, and key innovation teams on civil engineering safety and disaster prevention respectively at the Tianjin- and Ministry-levels.

## 2. Academic structure and curriculum

The purpose of this project is to cultivate international high-level engineering talents who are engaged in scientific research, engineering technology, teaching and other related work in the field of civil engineering with good moral character, physical and mental health, strong dedication and good academic ethics. The program focuses on improving the cultivation quality, especially cultivating students' global vision, international awareness, scientific literacy, humanistic literacy, innovative spirit and practical ability. The cultivation mainly adopts the combination of course learning, scientific research practice and academic exchange, and implements the guidance of individual or team supervisors.

The total credits of course learning shall not be less than 29 credits. Among them, 24 credits for course study, 14 credits for degree courses, 10 credits for optional courses and 5 credits for compulsory module. Please refer to the following table for courses and credits.

Category	Course Code	Course Name	Credit	Credit Hour	School	Remarks
Degree course	B3085001	1 Chinese Culture1	2	40	School of International Education	
	S2050016	2Advanced Soil Mechanics (1)	2	32	School of Civil Engineering	
	S2050018	3 Research Methodology	1	16	School of Civil Engineering	
	S205G001	4 Elastic-Plasticity Mechanics of Engineering	2	32	School of Civil Engineering	
	S205R002	5 Theory and Technique of Engineering Structures Experiments	1	32	School of Civil Engineering	
	S3088014	6 Chinese Language	4	64	School of International Education	

	S131GA02	7 Matrix Theory	2	32	School of Mathematics	Choose 1
	S131GA06	8 Applied Statistics	2	32	School of Mathematics	
	Subtotal		14			
Optional course	B3085002	9 Chinese Culture 2	1	20	School of International Education	Required course
	S205E003	10 Advanced Steel Structures	2	32	School of Civil Engineering	Required course
	S2055042	11Advanced Structural Dynamics	2	32	School of Civil Engineering	Required course
	S2055055	12 Numerical Modeling and Analysis Methods of Engineering	2	32	School of Civil Engineering	Required course, choose 1
	S205E008	13 Advanced Reinforced Concrete Structures	2	32	School of Civil Engineering	
	S2050017	14Advanced Rock Mechanics and Engineering(bilingual)	2	32	School of Civil Engineering	Direction: Hydraulic Engineering
	S2055005	15Environmental Hydraulics	2	32	School of Civil Engineering	
	S2055014	16 Water Resources Planning and Management	2	32	School of Civil Engineering	
	S2055020	17 Computational Fluid Dynamics	2	32	School of Civil Engineering	
	S2055025	18Introduction toSatellite Remote Sensing and Geographic Information System	2	32	School of Civil Engineering	
	S2055026	19 Urban Hydrology	2	32	School of Civil Engineering	
	S2055027	20 Green Water Infrastructure	2	32	School of Civil Engineering	
	S2055060	21 Mechanics of Sediment Transport	2	32	School of Civil Engineering	
	S2055084	22 Introduction to Ecology	2	32	School of Civil Engineering	
	S2055085	23 Advanced Safety Analysis of Hydro-structure	2	24	School of Civil Engineering	
	S2055086	24 Distributed Hydrological Modeling of Large Scale Land-atmosphere Coupling	2	32	School of Civil Engineering	
S2055087	25 Introduction to Optimization Analysis in Hydrosystem Engineering	2	32	School of Civil Engineering		

	S2055032	26 Advanced Fluid Mechanics	2	32	School of Civil Engineering		
	S2095001	27 Global Construction Practice and Innovation	3	32	College of Management and Economics		
	S2055038	28 Theory and Application of Aseismic Engineering	2	32	School of Civil Engineering	Direction: Civil Engineering	
	S2055039	29 Structure Wind Engineering	2	32	School of Civil Engineering		
	S2055053	30 Design and Theory about High-rise Buildings	2	32	School of Civil Engineering		
	S2055078	31 Modern Theory of Tunnel and underground Engineering	2	32	School of Civil Engineering		
	S2055079	32 Advanced Construction Materials	2	32	School of Civil Engineering		
	S205E009	33 Theory and Application of Structural Stability	2	32	School of Civil Engineering		
	S2055064	34 Analysis of Structural Response under Dynamic Load	2	32	School of Civil Engineering		Direction: Naval and Ocean Engineering
	S2055080	35 Advanced Mobile Offshore Platforms	2	32	School of Civil Engineering		
	S2055081	36 Subsea Riser Design Technology	2	32	School of Civil Engineering		
	S2055082	37 Design Principles for Offshore Floating Structures	2	32	School of Civil Engineering		
	S2055083	38 Flow-induced Vibration	2	24	School of Civil Engineering		
	S2055088	39 Marine Renewable Energy	2	32	School of Civil Engineering		
	S205E084	40 Nonlinear Vibration and Its Engineering Application	1.5	24	School of Civil Engineering		
	S205E085	41 Sea Loads on Ships and Offshore Structures	1.5	24	School of Civil Engineering		
	S205E087	42 Offshore Soil Mechanics	1.5	24	School of Civil Engineering		
	Required credits		10				
Compulsory	S1318001	43 Literature Reading	1	0	Graduate School		
	S1318002	44 Thesis Proposal	1	0	Graduate School		

Module	S1318003	45 Seminar Report	1	0	Graduate School	
	S1318004	46 Mid-term Evaluation	1	0	Graduate School	
	S1318005	47 Lectures on Advanced Research Topics	1	0	Graduate School	
	Subtotal		5			
<b>Total credit</b>			29			

### 3. Duration and teaching language

The duration is 2 years, and the courses are taught in English.

In the first year, students are required to complete courses, research and thesis preparation in China. In the second year, students will return to their own countries to engage in scientific research related to their thesis under the guidance of their supervisors. Thesis defense can be conducted online. Master's degree and graduation certificate will be awarded if the student finish all course work and pass the thesis defense.

## II. Tianjin University "the Belt and Road" Excellence Talents Cultivation in Chemical Engineering Program

### 1. Discipline Introduction

Chemical Engineering Discipline in Tianjin University is among the first group of National First Class Key Disciplines and Double First Class Disciplines. It has consistently ranked No.1 in the Chemical Engineering and Technology Discipline Evaluation by the Ministry of Education of China for four times, and No.1 in the Best Chinese Universities Ranking for Chemical Engineering and Technology Discipline. Since 2008, Chemical Engineering and Technology Program(Undergraduate) has been accredited at Master Level by the Institution of Chemical Engineers for three rounds. Also, the school has been awarded the First Prize in the National Teaching Achievement Award for five consistent rounds from 2001 to 2018 (the only one among national universities). Tianjin Co-Innovation Center of Chemical Science and Engineering is one of the first batch of 14 national strategic research platforms of

"2011 Plan". Frontier Science Center of Synthetic Biology becomes one of the seven frontier centers initiated in the first Everest Plan for fundamental researches by the Ministry of Education.

## 2. Academic structure and curriculum

The purpose of this project is to cultivate international high-level engineering talents who are engaged in scientific research, engineering technology, teaching and other related work in the field of chemical engineering with good moral character, physical and mental health, strong dedication and good academic ethics. The program focuses on improving the cultivation quality, especially cultivating students' global vision, international awareness, scientific literacy, humanistic literacy, innovative spirit and practical ability. The cultivation mainly adopts the combination of course learning, scientific research practice and academic exchange, and implements the guidance of individual or team supervisors.

The total credits of course learning shall not be less than 30 credits. Among them, core courses shall be no less than 16 credits, compulsory module shall be no less than 5 credits, and optional courses shall be no less than 9 credits. Please refer to the following table for courses and credits.

Category	Course Code	Course Name	Credit	Credit Hour	School
Optional course	B3085002	1 Chinese Culture 2	1	20	School of International Education
	S2070005	2 Organometallic Chemistry of the Transition Metals	2	32	School of Chemical Engineering
	S2070006	3 Bio-active and special chemicals	2	32	School of Chemical Engineering
	S2075037	4 Transport Phenomena	2	32	School of Chemical Engineering
	S2075064	5 Catalytic Kinetics and Reactor Design	2	32	School of Chemical Engineering
	S2075068	6 Modern Experimental Technology for Chemical Engineering	2	32	School of Chemical Engineering
	S2075085	7 Advance fluidization : theory and applications	2	32	School of Chemical Engineering

	S2078024	8 Introduction to Chemical Engineering for Semiconductor Manufacturing	2	32	School of Chemical Engineering
	Required credits		9		
Compulsory Module	S1318001	9 Literature Reading	1	0	Graduate School
	S1318002	10 Thesis Proposal	1	0	Graduate School
	S1318003	11 Seminar Report	1	0	Graduate School
	S1318004	12 Mid-term Evaluation	1	0	Graduate School
	S1318005	13 Lectures on Advanced Research Topics	1	0	Graduate School
	Subtotal			5	
Core course	B3085001	14 Chinese Culture 1	2	40	School of International Education
	S131A017	15 Chinese Language	4	160	School of International Education
	S2075059	16 Chemical Reaction Engineering	2	32	School of Chemical Engineering
	S2075060	17 Chemical Separation Processes	2	32	School of Chemical Engineering
	S2075061	18 Chemical Engineering Thermodynamics	2	32	School of Chemical Engineering
	S2075062	19 Mass transfer processes	2	32	School of Chemical Engineering
	S2075063	20 Chemical Process Systems Engineering	2	32	School of Chemical Engineering
	Subtotal			16	
<b>Total credit</b>			30		

### 3. Duration and teaching language

The duration is 2 years, and the courses are taught in English.

In the first year, students are required to complete courses, research and thesis preparation in China. In the second year, students will return to the motherland to engage in scientific research related to their thesis under the guidance of their supervisors. Students should publish a signed scientific and technological thesis with Tianjin University as the first unit, ranking is not limited. Thesis defense can be conducted online.