Bachelor Program of Civil Engineering

（in English）

“土木工程专业”本科教学方面（英文授课）

(This document is the text compression version of the same major taught in Chinese and only for international students)

School of Transportation Science and Engineering & International School

Beihang University, Beijing, China

北京航空航天大学交通科学与工程学院 & 国际学院

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一、 学院简介

I. Department of Civil Engineering Introduction

土木与机场工程系成立于 1999 年，目前承载 1 个一级学科——土木工程和 1 个二级学科——道路与铁道工程的学科建设和人才培养，设有道路与铁道工程博士学位点和博士后流动站，土木工程（含 6 个二级学科）和道路与铁道工程硕士学位点。依据“高起点、求特色、国际化”的办学方针，经历十多年的发展，已形成结构工程、岩土工程、工程材料、道路与铁道工程、测绘与地理信息工程和机场道基道面工程等学科方向成熟完备的教学与科研体系。

Established in 1999, the Department of Civil Engineering at Beihang University has one first-level disciplines (Civil Engineering), one second-level disciplines (Roadway and Railway Engineering), doctoral degree and postdoctoral research center in Roadway and Railway Engineering. Aiming at high starting point, seeking characteristics and internationalization, the Department of Civil Engineering has high-quality education and research system in structural engineering, geotechnical engineering, engineering material, roadway and railway engineering, surveying and mapping and Geographic Information Engineering, and airport pavement engineering.

土木与机场工程系有教师 23 人，其中中国工程院院士 1 人（兼职教授），教授 8 人，副教授 8 人，其中 973 首席科学家 1 人，“青年千人”2 人、北航“卓越百人”岗聘副教授 2 人，100%具有博士学位，90%具有海外学习或工作经历，已经形成了一支结构合理、积极进取、创新能力强的教师队伍。

Currently there are 23 full-time faculty members in the Department of Civil Engineering dedicated to the education of more than 200 undergraduate students and 80 graduate students. All faculty members including 8 professors, 8 associate professors and 7 lecturers, earn the PhD degree from the most prestigious universities in China and oversea. 90% of our faculty members have research experience abroad in U.S., Europe and Japan. The department also has ten adjunct professors from other top universities and research institutions across the country, including a member of Chinese Academy of Engineering, one 973 Program Chief Scientists, two 1000-plan Youth Talent Titled professors and two Beihang Zhuoyue 100 titled associated professors.

二、 培养目标

II. Educational Objectives

掌握土木工程学科基本原理和基本知识,在建筑结构和岩土工程等土木工程设计、施工、监理、勘察、管理、研究等领域获得工程师基本训练、具有创新精神与实践能力的高级工程技术人才和有工程技术基础的经营管理复合型人才。

The four-year curriculum leading to the Bachelor of Engineering in Civil Engineering (BECE) aims at offering undergraduate students depth in courses considered essential for professionals in civil engineering and breadth in a wide range of technical areas through providing a variety of selective courses.

三、 毕业要求

III. Degree Requirements

学生主要学习数学、力学、计算机、工程制图、测量、土木工程材料、施工技术、工程经济等方面的基础理论与基础知识，受到计算机应用、工程实践能力的基本训练。本专业开设结构工程、岩土工程、机场工程和工程管理等领域相关课程，学生可以根据自身爱好与发展需要系统地进行修读。

Graduates need to complete courses in mathematics, mechanics, computer science, survey, engineering materials, structural mechanics and design, soils and foundations.

毕业生应获得以下几方面的知识和能力：

Graduates will have such capability upon graduation:

(1) 掌握高等数学和工程数学知识
Mastering advanced mathematics.

(2) 熟悉哲学、历史、社会学、经济学等社会科学基本知识
Understanding philosophy, history, social science, economics and management.

(3) 学习汉语
Mastering Chinese.

(4) 掌握理论力学、材料力学、结构力学、土力学、水力学等力学原理
Mastering theoretical mechanics, mechanics of materials, structural mechanics, soil mechanics, survey, structural experiments, engineering materials, construction.

(5) 了解建筑、规划、环境、交通、机械、设备、电气等相关专业的基本知识
Knowing basic concepts in environment, transportation, electronics and relevant law clauses.

四、 学制、学位

IV. Study Period

学制：四年

Study Period：4 Years， Maximum: 6 Years (not including military service time)

授予学位：工学学士

Degrees Conferred: Bachelor of Engineering

五、 专业特色

V. Characteristics

北航土木工程系致力于提供土木工程领域高质量的教学和最前沿的科研机会。在教学方面，培养本科生和研究生具有本专业坚实的科学工程理论基础以及技术专长。在科研方面，我们的专业交叉研究给学生提供有别于传统领域的多方位科研机会。

The Department of Civil Engineering at Beihang University is committed to offering a broad range of high-quality educational programs and state-of-the-art research opportunities within the field. Our educational programs in both undergraduate and graduate level provide students a sound foundation in the fundamentals of science and engineering coupled with proficient technical expertise in specialized fields, preparing students for leadership in the profession of civil engineering. Our interdisciplinary research activities give students a variety of opportunities to work on problems beyond traditional areas of the field.

六、 主干学科

VI. Main Disciplines

- 力学
  Mechanics
- 土木工程
  Civil Engineering

七、 课程体系

VII. Program Structure and Modules

共分为三个课程模块：基础课程、语言及文化课程、通识课程和专业课程。

There are three course modules: Foundation Courses, General Education (GE) Courses and Major Courses.

表 1 课程体系及各课程类别的最低学分要求示意图

Table 1 The Credit Requirement (Minimum) of each Course Type for Bachelor in Civil Engineering

课程模块 Course Module	Order	课程类别 Course Type	学分 Credits
Ⅰ 基础课程 Foundation Courses (FC)	A	数学与自然科学类 Mathematics and Natural Sciences (MNA)	30.0
	B	工程基础类 Engineering Fundamentals (EF)	8.0
	C	语言和文化 Language and Culture (LC)	10.0

II 通识课程 General Education Courses (GE)	D	思政类 Ideology and Politics (IP)	——
		军理类 Military Theory (MT)	——
	E	体育类 Physical Education (PE)	——
	F	核心通识课程 Core GE Courses (C-GE)	2.0
	G	一般通识 General GE Courses (G-GE)	2.0
	H	博雅类 Liberal Arts (LA)	
III 专业课程 Major Courses (MC)	I	核心专业基础课 Core Major Course (C-MC)	59.5
	J	一般专业课 General Major Course (G-MC)	
	L	专业实践课 Practical Major Course (PMC)	

基础课程模块，主要包括数学与自然科学类（如数学、物理等）、工基础类（如机械和电子工程训练、C 语言编程等），以及语言类。其中，《汉语》和《中国概况》是来华留学英文授课本科生的必修课。通识课程模块，旨在培养和提高学生在人文、社科等方面的知识和修养。

Foundation Courses (FC) include Mathematics and Natural Sciences courses (Mathematics, Physics, etc.), Engineering Fundamentals courses (Mechanism, Electronics Engineering, C language, etc.). Language courses include Chinese courses for oversea student studied in China. General Education courses are courses to improve knowledge and cultivation in humanities and social sciences.

博雅类主要含暑期学校和社会实践。

Liberal Arts (LA) mainly include summer school course and social practice course.

专业课程模块，分为专业基础课程、实践课程（含毕业设计）、专业核心课程以及一般专业选修课程。学生可根据个人的兴趣及发展方向，在学业指导老师的指导下学习。

Major courses are divided into Fundamental Major Course, Major-oriented Course, General Major Courses and Practical Major Courses (including Graduation Project). The students can select based on their own interest and direction under the guidance of school academic advisors.

八、 毕业最低学分

VIII. Minimum Required for Graduation

毕业最低学分要求：在满足各课程类别最低学分的要求下，总学分不低于 125 学分。

Minimum Required for Graduation=125 credits, and meet the credit requirement of each Course Type at the same time.

九、 教学进程计划

IX. Education Curriculum：

the 1st Semester

Code	Title	Hours	Credits	Note	Type	Evaluation
A09A101I	工科高等数学(1) Advanced Mathematics for Engineering (1)	90	6.0	Compulsory	MNA	Examination
B25D111I	中国概况 Introduction to China	32	2.0	Compulsory	LC	Examination
B1C251131L	汉语(1) Chinese (1)	64	4.0	Compulsory	LC	Examination
C05D101I	航空航天概论 B Introduction to Aeronautics and Astronautics B	32	2.0	Compulsory	C-GE	Examination
C06D101I	大学计算机基础 University Computer Foundation	44	2.0	Compulsory	G-GE	Examination
C32D101I	工程认识 Engineering Experience and Cognition	20	0.5	Compulsory	EF	Test
E13D151I	土木工程概论 Introduction to Civil Engineering	16	1.0	Compulsory	MOC	Examination
	学期学分小计 Semester Credits		17.5			

the 2nd Semester

Code	Title	Hours	Credits	Note	Type	Evaluation
A09A102I	工科高等数学(2) Advanced Algebra for Engineering (2)	86	5.0	Compulsory	MNA	Examination
A09A103I	工科高等代数 Advanced Algebra	80	5.0	Compulsory	MNA	Examination
A19A101I	工科大学物理(1) University Physics for Engineering (1)	64	4.0	Compulsory	MNA	Examination
B1C251141L	汉语(2) Chinese (2)	64	4.0	Compulsory	LC	Examination
C25D121I	C 语言程序设计与实践 C Programming Language	48	2.5	Compulsory	EF	Examination
G13D302I	认识实习 Basic Practice	40	1.0	Compulsory	PMC	Examination
	学期学分小计 Semester Credits		21.5			

the 3rd Semester

Code	Title	Hours	Credits	Note	Type	Evaluation
A09B204I	概率统计 A Probability Statistics A	48	3.0	Compulsory	MNA	Examination
A19A202I	工科大学物理(2) University Physics for Engineering (2)	64	4.0	Compulsory	MNA	Examination
A19A103I	基础物理实验 B(1) Fundamental Physics Experiments B(1)	28	1.5	Compulsory	MNA	Examination
E07B211I	工程材料 The Science of Engineering Materials	34	2.0	Compulsory	FMC	Examination

Code	Title	Hours	Credits	Note	Type	Evaluation
E05B201I	理论力学 A(1) The Principles of Automatic Control A(1)	64	4.0	Compulsory	FMC	Examination
G32A201I	机械工程技术训练 A Mechanical Technology Practice A	140	3.5	Compulsory	EF	Test
	学期学分小计 Semester Credits		20.0			

the 4th Semester

Code	Title	Hours	Credits	Note	Type	Evaluation
A19A104I	基础物理实验 B(2) Fundamental Physics Experiments B(2)	24	1.5	Compulsory	MNA	Examination
E05B204I	材料力学 A Mechanics of Materials A	80	5.0	Compulsory	FMC	Examination
E05B202I	理论力学 A(2) The Principles of Automatic Control A(2)	26	1.5	Compulsory	FMC	Examination
G32A204I	电子工程技术训练 Electronic Technology Practice	120	1.5	Compulsory	EF	Examination
E13C261I	测量学 Surveying	40	2.5	Compulsory	MOC	Examination
G13C369 I	测量实习 Surveying Practice	80	2.0	Compulsory	MOC	Examination
	学期学分小计 Semester Credits		14.0			

the 5th Semester

Code	Title	Hours	Credits	Note	Type	Evaluation
E13C272I	结构力学 (II) Structural Mechanics (II)	48	3.0	Compulsory	FMC	Examination
E13C361I	混凝土结构设计原理 Design Principles of Structural Concrete Members	48	3.0	Compulsory	FMC	Examination
G13C362I	课程设计（混凝土楼盖） Course Design	60	1.5	Compulsory	FMC	Test
E13C372I	土力学 Soil Mechanics	32	2.0	Compulsory	FMC	Examination
B3J050701	振动力学基础 Vibration Mechanics	32	2.0	Compulsory	MOC	Examination
	学期学分小计 Semester Credits		11.5			

the 6th Semester

Code	Title	Hours	Credits	Note	Type	Evaluation
E13C363I	钢结构设计原理 Basis of Steel Structural Design	40	2.5	Compulsory	FMC	Examination
G13C365I	课程设计（钢结构设计） Course Design	40	1.0	Compulsory	FMC	Examination
G13C363I	课程设计（单层厂房） Course Design	60	1.5	Compulsory	FMC	Test
Code	**Title**	**Hours**	**Credits**	**Note**	**Type**	**Evaluation**

E13C362I	混凝土结构与砌体结构设计 Design of Reinforced Concrete Structure and Masonry Structure	32	2.0	Compulsory	FMC	Examination
G13D301I	生产实习 Practical Intern	200	3.0	Compulsory	PMC	Examination
B3J050611	结构分析中的有限元法—偏理论 Finite Element Method - Theory	32	2.0	Compulsory	MOC	Examination
B3J050691	有限元法在结构分析中的应用—偏应用 Finite Element Method - Application	32	2.0	Compulsory	MOC	Examination
	学期学分小计 Semester Credits		14.0			

the 7th Semester

Code	Title	Hours	Credits	Note	Type	Evaluation
E13C366I	基础工程 Foundation Engineering	24	1.5	Compulsory	FMC	Examination
G13C366I	课程设计（基础工程） Course Design	20	0.5	Compulsory	PMC	Test
B3I050511	弹性力学 Mechanics of Elasticity	32	2.0	Compulsory	MOC	Examination
F13D466I	木结构 Timber Structures	16	1.0	Compulsory	MOC	Examination
	学期学分小计 Semester Credits		5.0			

the 8th Semester 8

Code	Title	Hours	Credits	Note	Type	Evaluation
G13D4010I	毕业设计 Graduation Thesis	16 weeks	8.0	Compulsory	PMC	Test

备注

(1) 只列出各学期必修课程目录

Only compulsory courses are listed

(2) **课程类别的相关说明**

Explanation of course type:

数学与自然科学类	Mathematics and Natural Sciences (MNA)
工程基础类	Engineering Fundamentals (EF)
语言和文化	Language and Culture (LC)
核心通识课程	Core GE Courses (C-GE)
一般通识	General GE Courses (G-GE)
核心专业基础课	Core Major Courses(C-MC)
一般专业课	General Major Course(G-MC)
专业实践课	Practical Major Course (PMC)

如下课程留学生可选修
Other courses student can select

Course Type	Title	Credits	Note
PE	体育课 Physical Education	0.5 Credit/Semester	International students can select from the 2nd semester.
LA	文化素质拓展 Culture Quality Developing	1.0 Credit/Semester	International students can select from the 3rd semester.
G-GE	暑期学校系列课程 Courses in Summer Camp	Max 6.0 Credits /Summer Semester	International students can select the courses in summer semester (3rd semester) during the 2nd or the 3rd academic year.
G-GE	专业英语阅读与写作 Professional English Reading and Writing	2.0 Credits/Semester	International student can select since 5th semester.
	汉语水平考试 HSK	1.0 credit	One credit will be offered if the international student passed HSK 3 or over.
	社会实践 Social Practice	1.0 Credit	
	其他课程 Other Courses		See the time-table at the beginning of each semester.

十、 联系方式

X. Contact Detail

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