

土木工程

Civil Engineering

专业代码：081001

学制：4年

Program Code:081001

Duration: 4years

培养目标：

培养适应国家现代化建设和经济发展需要，掌握土木工程学科及相关领域的基本原理和基础知识，具有社会责任感和职业道德精神，毕业后能够在土木工程相关领域从事勘察设计、工程施工、工程维护与运行、项目管理、科学研究等工作的应用型高级专门人才，并具备终身学习的能力。培养学生的知识和能力具有全国一流水平，能适应华南、港澳及东南亚地区的重大经济需求，同时具有一定的国际视野和国际交往能力。

Educational Objectives:

For satisfying the needs of national modernization and economic development, train the applied specialist with the basic principles and basic knowledge of civil engineering disciplines and related fields, with social responsibility and professional ethics, graduates can be engaged in survey, design, construction, maintenance and operation, project management and research with the lifelong learning capacity. The cultivation of students' knowledge and ability has a national first-class level, can adapt to the major economic needs of south China, Hong Kong, Macao and Southeast Asia, and also possess a certain international perspective and communication skill.

毕业要求：

№1.工程知识：能够将数学、自然科学、专业基础和专业知识用于解决土木工程专业的复杂工程问题。

- 1.1 掌握数学及其相关领域的基础理论知识，并为解决复杂工程问题奠定扎实的理论基础。
- 1.2 掌握物理、化学及其相关领域的基础理论知识，并为解决复杂工程问题奠定扎实的理论基础。
- 1.3 掌握专业基础课程及其相关领域的基础理论知识，并为解决复杂工程问题奠定扎实的理论基础。
- 1.4 掌握专业课程及其相关领域的理论知识，并为解决土木工程复杂问题奠定扎实的理论基础。

№2.问题分析：能够应用数学、自然科学和土木工程学科的基本原理，识别、表达、并通过文献研究分析土木工程专业的复杂工程问题，以获得有效结论。

- 2.1 能够应用数学基础知识进行复杂工程问题分析、识别、表达的能力。
- 2.2 能够应用自然科学基础知识进行复杂工程问题分析、识别、表达的能力。
- 2.3 能够应用专业基础知识进行复杂工程问题分析、识别、表达的能力。
- 2.4 能够通过多种途径获取知识并分析复杂工程问题的能力并获得有效结论。

№3.设计/开发解决方案：能够设计（开发）满足土木工程特定需求的体系、结构、构件（节点）

或施工方案，并在设计环节考虑社会、健康、安全、法律、文化以及环境等因素。在提出复杂工程问题的解决方案时具有创新意识。

3.1 掌握设计针对复杂工程问题解决方案的从事专业工程工作所必须的专业基础知识。

3.2 掌握设计针对复杂工程问题解决方案的从事专业工程工作所必须的专业核心知识。

3.3 掌握设计针对复杂工程问题解决方案的从事专业工程工作所必须的专业基本技能。

3.4 掌握设计针对复杂工程问题解决方案的从事专业工程工作所必须的专业基本实践技能。

3.5 掌握设计针对复杂工程问题解决方案的从事专业工程工作所必须的综合研究技能。

3.6 了解土木工程专业现状、发展前沿及趋势。

№4.研究：能够基于科学原理并采用科学方法对土木工程专业的复杂工程问题进行研究，包括设计实验、收集、处理、分析与解释数据、通过信息综合得到合理有效的结论并应用于工程实践。

4.1 掌握基于科学原理并采用科学方法对复杂工程问题进行研究的基本方法和基本理论（数据整理和分析）。

4.2 掌握基于科学原理并采用科学方法对复杂工程问题进行研究物理及材料结构表征、分析测试技能。

4.3 掌握基于科学原理并采用科学方法对复杂工程问题进行研究力学测试分析表征基本方法和技能。

4.4 培养基于科学原理并采用科学方法对复杂工程问题进行研究对实验结果具有整理、归纳和分析的能力。

4.5 对基于科学原理并采用科学方法对复杂工程问题进行研究的结果进行有效分析并获得相关结论。

4.6 具备基于科学原理并采用科学方法对复杂工程问题进行研究所必需的实验设计和研究能力，对实验内容有全面的认识和了解。

№5.使用现代工具：能够针对复杂工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，包括对土木工程复杂工程问题的预测与模拟，并能够理解其局限性。

5.1 掌握基本设计和测试技能。

5.2 掌握工程设计实践技能。

5.3 用于解决复杂工程技术问题的基本技能。

5.4 用于解决复杂工程技术问题的综合技能。

№6.工程与社会：能够基于土木工程相关背景知识和标准，评价土木工程项目的的设计、施工和运行的方案，以及复杂工程问题的解决方案，包括对社会、健康、安全、法律以及文化的影响，并理解土木工程师应承担的责任。

6.1 培养评价土木工程项目的的设计、施工和运行的方案，以及复杂工程问题的解决方案对社会、健康、安全、法律以及文化影响的基本能力。

6.2 树立土木工程问题解决方案对社会、健康、安全、法律以及文化相应责任感。

№7.环境和可持续发展：能够理解和评价针对土木工程专业复杂工程问题的工程实践对环境、社会可持续发展的影响。

7.1 正确评价工程实践中的环境和社会可持续发展的基本技能。

7.2 正确的分析、认识和评价在复杂工程实践中的环境影响。

7.3 正确的分析、认识和评价在复杂工程实践中的社会可持续发展的影响。

№8.职业规范：具有人文社会科学素养、社会责任感，能够在工程实践中理解并遵守工程职业道德和行为规范，履行责任。

8.1 培养扎实的人文素质修养和社会责任感。

8.2 培养并在实践中践行职业道德和行为规范。

№9.个人和团队：在解决土木工程专业的复杂工程问题时，能够在多学科组成的团队中承担个体、团队成员以及负责人的角色。

9.1 培养一定的团队协作能力。

9.2 培养一定的团队领导技能。

9.3 培养一定的管理及协调技能。

№10.沟通：能够就土木工程专业的复杂工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令。并具备一定的国际视野，能够在跨文化背景下进行沟通和交流。

10.1 培养专业信息交流与沟通的技能（报告撰写，设计文档，陈述发言，表达及回应指令）。

10.2 具有专业领域知识发展相关的国际化视野。

10.3 具有多学科，跨文化背景下的沟通交流技能及实践。

10.4 培养一定的人际交往和沟通能力，团队合作精神。

№11.项目管理：理解并掌握土木工程管理原理与经济决策方法，并能在多学科环境中应用。

11.1 掌握工程管理原理的基本原理和方法。

11.2 掌握工程中经济决策的基本原理和方法。

11.3 工程管理与经济决策方法在专业教育和实践中的应用。

11.4 理解工程管理中 BIM 的作用。

№12.终身学习：具有自主学习和终身学习的意识，具有提高自主学习和适应土木工程新发展的能力。

12.1 掌握提高自身素养的学习技能。

12.2 掌握提高专业素质的学习技能。

12.3 适应土木工程新发展的能力。

Student Outcomes:

№1. Engineering Knowledge: An ability to apply knowledge of mathematics, science, fundamental and advanced engineering to solve complicated civil engineering problems.

1.1An ability to know knowledge of mathematics and related courses, and lay the solid foundation for solve complicated engineering problems.

1.2An ability to know knowledge of physics, chemistry and related courses, and lay the solid foundation for solve complicated engineering problems.

1.3An ability to know knowledge of discipline basic courses, and lay the solid foundation for solve complicated engineering problems.

1.4An ability to know knowledge of discipline professional courses, and lay the solid foundation for solve complicated engineering problems.

№2. Problem Analysis: An ability to apply fundamental theory of mathematics, science, and civil engineering to recognize, express and analyze complicated civil engineering problems, for obtaining effective conclusions.

2.1 An ability to apply fundamental theory of mathematics to recognize, express and analyze complicated engineering problems.

2.2 An ability to apply fundamental theory of science to recognize, express and analyze complicated engineering problems.

2.3 An ability to apply fundamental theory of discipline to recognize, express and analyze complicated engineering problems.

2.4 An ability to access knowledge by multiple ways to recognize, express and analyze complicated engineering problems, for obtaining effective conclusions.

№3. Design/Development Solution: An ability to develop solutions for complicated civil engineering problems, and innovatively design systems, components or process that meet desired needs within realistic constraints, such as social, health, safety, legal, cultural and environmental considerations. An ability to possess creative ideas in developing solutions for complicated civil engineering problems.

3.1 An ability to know discipline basic knowledge to develop solutions for complicated engineering and discipline-related problems.

3.2 An ability to know discipline core knowledge to develop solutions for complicated engineering and discipline-related problems.

3.3 An ability to know disciplines skill to develop solutions for complicated engineering and discipline-related problems.

3.4 An ability to know discipline practical skill to develop solutions for complicated engineering and discipline-related problems.

3.5 An ability to know discipline comprehensive research skill to develop solutions for complicated engineering and discipline-related problems.

3.6 An ability to know current situation, innovative development and future trend of civil engineering.

№4. Research: An ability to conduct research on complicated civil engineering problems based on scientific theories and methods, including design of experiments, collect, processing, analysis and interpretation of data, and synthesis of information, for obtaining effective conclusions and applying them in engineering practice.

4.1 An ability to conduct research on complicated engineering problems based on scientific theories and methods, including data processing and analysis.

4.2 An ability to conduct research on complicated engineering problems based on scientific theories and methods, including analysis and test on physical and structural characterization of material.

4.3 An ability to conduct research on complicated engineering problems based on scientific theories and methods, including analysis skill on mechanical properties of material.

4.4 An ability to conduct research on complicated engineering problems based on scientific theories and methods, including skill training on processing, induction and analysis of experimental result.

4.5 An ability to conduct research on complicated engineering problems based on scientific theories and methods for obtaining effective conclusions.

4.6 An ability to conduct research on complicated engineering problems based on scientific theories and methods, including learn and design of experiment.

№5. Application of Modern Tool: An ability to develop, select and apply appropriate techniques, resources, modern engineering, and information technology tools, for solving complicated civil engineering problems, including prediction and modelling complicated civil engineering problems with understanding limitations.

5.1 An ability to know basic design and test skill.

5.2 An ability to know engineering design and practical skill.

5.3 An ability to know basic skill for solving complicated engineering problem.

5.4 An ability to know integrated skill for solving complicated engineering problem

№6. Engineering and Society: An ability to apply related engineering knowledge to analyze and evaluate engineering application, complicated civil engineering problems solutions, and their impacts to society, healthy, safety, legal and cultural issues, as well as understand the responsibilities of civil engineer.

6.1 An ability to evaluate design, construction and operation proposal of civil engineering, and know the impact of solution of complicated engineering problems to society, healthy, safety, legal and cultural issues.

6.2 An ability to know the responsibilities of solution of complicated engineering problems to society, healthy, safety, legal and cultural issues.

7. Environment and Sustainable Development: An ability to understand and evaluate the impact of professional civil engineering solutions to issues of environment and sustainable development.

7.1 An ability to apply skill to properly evaluate the impact of professional engineering solutions to issues of environment and sustainable development.

7.2 An ability to properly analyze, recognize and evaluate the impact of professional engineering solutions to issues of environment.

7.3 An ability to properly analyze, recognize and evaluate the impact of professional engineering solutions to issues of sustainable development.

№8. Professional Standards: An understanding of humanity science and social responsibility; an ability to understand and abide by ethics, standards and responsibly in engineering practice.

8.1 To develop humanity quality and social responsibility.

8.2 To develop ethics and professional standards in engineering practice.

№9. Individual and Teams: An ability to function on multi-disciplinary teams as an individual, a team member or leader in solving complicated civil engineering problems.

9.1 To develop team cooperation.

9.2 To develop leadership.

9.3 To develop management and coordinating skills.

№10. Communication: An ability to communicate effectively on complicated civil engineering problems with industrial community and society, including writing reports and comprehending documentations, making presentations, or responding instructions, as well as making communication in cross-cultural context with international perspective.

10.1 To develop professional communication skill, including writing reports and comprehending documentations, making presentations, or responding instructions.

10.2 To develop discipline international vision.

10.3 To develop communication and practical skill for multidisciplinary and cross-culture.

10.4 To develop interpersonal communication and team-work spirit.

№11. Project Management: An ability to understand and apply engineering management and economic decision-making in multidisciplinary.

11.1 To know basic principle and method of engineering management.

11.2 To know basic principle and method of engineering economics decision.

11.3 To know application of engineering management and economics decision in professional education and practice.

11.4 To know Build Information Modelling (BIM) in engineering management.

№12. Lifelong Learning: An ability to recognize the need for, and to engage in independent and life-long learning for adaptive capacity and development.

12.1 To develop self-improvement learning skill.

12.2 To develop professional quality learning skill.

12.3 To develop skill for adaptation of innovation of civil engineering.

专业简介:

土木工程系作为原华南工学院建立之初的六个学系之一，其办学的历史更为悠久，最早可追溯到 1933 年广东省立襄勤大学工学院的建筑工程系。土木工程专业已有 80 余年的办学历史，先后为国家培养了房建结构、地下结构、路桥工程设计、施工和管理等方面的高级技术人才 10000 余人。在全国尤其是在华南与港澳地区拥有较大影响，获得了良好的声誉。2003 年土木工程专业被评为广东省名牌专业，2010 年成为广东省特色专业，2010 年被列为教育部首批“卓越工程师教育培养计划”实施专业。

土木工程学科是我国华南地区最早拥有一级学科博士点及博士后科研流动站的学科，已形成学士-硕士-博士完整的人才培养体系。作为亚热带建筑科学国家重点实验室的重要组成部分，建成防灾减灾三大实验平台（结构耐火实验室、风洞实验室、地震模拟振动台实验室），为学生实验教学和从事科研活动提供了良好的平台。

土木工程学科现有专任教师近 90 人，还有多名名誉教授、兼职教授和顾问教授，形成了一支知识、职称及年龄结构合理的稳定教师队伍。土木工程专业目前在校内建立了 3 个大学生创新能力培养基地，在校外建立了 30 多个产学研实践教学和实习基地。与美国、英国、澳大利亚、加拿大等多所知名高校签订了本硕博各个层面的联合培养项目。此外还有与国内外多所知名高校及港澳、台湾等高校的短期交换生项目。

Program Profile:

As the one of the first founded Departments of the South China Institute, the history of the Department of civil engineering is more long, can be traced back to the department of architectural engineering of Engineering School of Guangdong Province XiangQin University of Technology in 1933. Civil Engineering major has more than 80 years history. It has cultivated more than 10,000 alumni for the country in the areas of structural engineering, underground engineering, road and bridge engineering, construction and management engineering. It possesses high reputation over the nation, especially in southern China, Hong Kong and Macao areas. The major was entitled “Guangdong Province Famous Professional Major” in 2003, “Guangdong Province Feature Professional Major” in 2010, and the first batch of "Excellent Engineer Education and Training Program" awarded by the Ministry of Education in 2010.

The major of civil engineering is the first batch in southern China which can confer the class-one doctoral degree and establish postdoctoral research station, and it has formed a complete expert training system from the bachelor, master to doctor degrees. As a key component of the State Key Laboratory of Subtropical Building Science, three experimental platforms for disaster prevention and mitigation (structural fire resistance laboratory, wind tunnel laboratory and earthquake simulation shaking table laboratory) have been established for the teaching and research.

There are nearly 90 faculty members, including 28 full professors, 21 doctoral mentors, who teach the undergraduate courses every year, several emeritus, part-time and consultant professors. The balance between experience, professional title and age can be well achieved for the teaching teams formed by the faculty members. There are 3 student innovation training bases in the campus, and more than 30 production-learning-research integration bases outside the campus. Joint degree programs for students are established with many prestigious universities in US, UK, Australia and Canada. In addition, short-term exchange student programs are established with many well-known universities in mainland China, Hong Kong, Macao, Taiwan areas and abroad.

专业特色:

本专业部分课程采用全英及双语教学，开设科技前沿专题讲座和创新实践课程，依托国家重点实验室防灾减灾三大实验平台、校外产学研实践教学和实习基地，为学生实验教学、实习和科研活动提供良好的平台，形成研-学-产一体化的培养模式。

Program Features:

Part courses of this program are taught in either English or bilingual Chinese-English. Cutting-edge seminars and innovative practice courses are included. Based on three experimental platform of the national key laboratory for disaster prevention and mitigation and internship base off campus, the cultivating mode is integrated with the production, learning and research.

授予学位: 工学学士学位

Degree Conferred: Bachelor of Engineering

主干课程:

理论力学、材料力学、结构力学、土力学、混凝土结构理论、钢结构理论、土木工程材料、工程测量、土木工程施工、土木工程项目管理。

Core Courses:

Theoretical Mechanics, Mechanics of Materials, Structural Mechanics, Soil Mechanics, Theory of Concrete Structures, Theory of Steel Structures, Materials for Civil Engineering, Surveying, Civil Engineering Construction, Construction, Project Management

特色课程:

全英语教学课程: 路面工程、结构力学、荷载及设计原则、结构力学专题

双语教学课程: 土木工程概论、荷载及设计原则、土木工程项目管理、弹性力学、路面养护与管理

新生研讨课: 土木工程与人类生活

专题研讨课: 土木工程学科讲座、工程管理 IT 技术、房地产开发与经营、高层建筑风效应及控制、高层建筑结构 (2)、结构优化专题

MOOC: 砌体结构

本研贯通课: 弹性力学与有限元法、高等钢筋混凝土结构

校企合作课: 认识实习、工程地质实习、生产实习、毕业实习、毕业设计、土木工程产业模式与创业、

竞教结合课程: 结构模型概念与实验

创新实践课程: 土木工程材料设计性实验、工程结构综合实验、结构模型概念与实验

创业教育课程: 土木工程产业模式与创业

Featured Courses:

Courses Taught in English: Pavement Engineering, Structural Mechanics, Loads and Design Principles, Structural Mechanics – Special Topics

Bilingual Courses: An Introduction to Civil Engineering, Loads and Design Principles, Construction Project Management, Elastic Theory, Pavement Maintenance & Management

Freshmen Seminars:Civil Engineering and human life

Special Topics:Seminars in Civil Engineering, IT Technology of Project Management,Real Estate

Development & Management, Wind Effect & Control for High-rise Buildings,Structural

Design for High-rise Buildings (2), Structure Optimization – Special Topics

MOOCs: Masonry Structures

Baccalaureate-Master’s Integrated Courses: Theory of Elastic Mechanics & FEM, Advanced Theory of

Concrete Structures

Cooperative Courses with Enterprises:Cognition Practice, Geological Engineering Practice,

Construction Practice, Graduation Practice, Graduation Design

Course, Civil Engineering Entrepreneurship

Contest-Teaching Integrated Courses:Structural Model Analysis & Experiments

Innovation Practice:Design Test of Civil EngineeringMaterials,Integrated Test of Structures,Structural

Model Analysis & Experiments

Entrepreneurship Courses:Civil Engineering Entrepreneurship

一、教学计划总体安排表（General Teaching Schedule）

学 年	学 期	教 学 进 度 安 排 （周）																			理 论 教 学	考 试	入 学 教 育	军 训	课 程 设 计	认 识 实 习	地 质 实 习	测 量 实 习	综 合 实 验	社 会 实 践	生 产 实 习	毕 业 实 习	中 外 合 作 项 目	毕 业 设 计	就 业 安 排	机 动	假 期	小 计														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19																			20													
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R																																	
一	1		C	A	A	A	A	A	A	A	A	A	A	A	A	A	B	D	D	D	14	1	1	3												19																
	2	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	M	Q	B	B	16	2											1			20																
二	3	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	F	Q	B	B	16	2													1		20															
	4	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	B	B	16	2							2								20															
三	5	G	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E	E	B	B	15	2			2		1										20															
	6	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	E	E	E	15	1			4												20															
四	7	E	A	A	A	A	A	A	A	A	A	A	A	A	A	I	B	E	K	K	13	1			2				1		3						20															
	8	L	E	O	O	O	O	O	O	O	O	O	O	O	O	O	O	P	Q	Q					1						1			15	1	2		20														
合 计（周）																			10	5	11	1	2	9	1	1	2	1		3	1	1		15	1	4																159

二、各类课程学分登记表（Registration Form of Curriculum Credits）

1.学分统计表（Credits Registration Form）

课程类别 Course Category	课程要求 Requirement	学分 Credits	学时 Academic Hours	备注 Remarks
公共基础课 General Basic Courses	必修 Compulsory	63.5	988	
	通识 General Education	10.0	160	
学科基础课 Disciplinary Basic Courses	必修 Compulsory	48.0	768	
	选修	23.5	384	

	Elective			
专业领域课 Specialty- related Courses	选修 Elective			
合计 Total		145.0	2300	
集中实践教学环节（周） Practice Training (Weeks)		37.0	37 周	
毕业学分要求 Credits Required for Graduation	145.0+37.0=182.0			

备注：学生在取得专业教学计划规定学分的同时，还必须取得第二课堂 2 个人文素质教育学分和 4 个创新能力培养学分。

2.类别统计表（Category Registration Form）

学时 Academic Hours					学分 Credits						
总学时数 Total	其中 Include		其中 Include		总学分数 Total	其中 Include		其中 Include			其中 Include
	必修学时 Compulsory	选修学时 Elective	理论教学学时 Theory Course	实验教学学时 Lab		必修学分 Compulsory	选修学分 Elective	集中实践教学环节 学分 Practice-concentrated Training	理论教学学分 Theory Course Credits	实验教学学分 Lab	创新创业教育学分 Innovation and Entrepreneurship Education
2300	1756	544	2018	282	182.0	148.5	33.5	37	136	9	10

三、专业教学计划表 (Teaching Schedule)

类别 Course Category	课程 代码 Course No.	课程名称 Course Title	是否 必修 C/E	学时数 Total Curriculum Hours				学分 数 Credits	开课 学期 Semester	毕业 要求 Student Outcomes
				总学 时 Class Hours	上机 Computer-ai ded Class Hours	实验 Lab Hours	实践 Practice Hours			
公共基础课 General Basic Courses	143093	思想道德修养与法律基础 Cultivation of Thought and Morals & Fundamental of Law	必修 课 C	(40) (36)				2.5	1	No8.1
	143091	中国近现代史纲要 Skeleton of Chinese Modern History		(32) 24				2.0	2	No8.1
	143106	毛泽东思想和中国特色社会主义理论体系概论 Thought of Mao ZeDong and Theory of Socialism with Chinese Characteristics		(80) 48				5.0	3	No8.1
	143090	马克思主义基本原理 Fundamentals of Marxism Principle		(40) 36				2.5	4	No8.2
	143094	形势与政策 Analysis of the Situation & Policy		(128)				2.0	1-8	No8.2
	144001	大学英语 (一) College English(1)		64				4.0	1	No10.1
	144002	大学英语 (二) College English(2)		64				4.0	2	No10.2
	145223	大学计算机基础 Foundations of Computer		32				2.0	1	No5.1
	152001	体育 (一) Physical Education (1)		32			32	1.0	1	No12.1
	152002	体育 (二) Physical Education (2)		32			32	1.0	2	No12.1
	152003	体育 (三) Physical Education (3)		32			32	1.0	3	No12.2
	152004	体育 (四) Physical Education (4)		32			32	1.0	4	No12.3
	106001	军事理论 Military Principle		(16)				1.0	2	No9.1
	140191	微积分 II (一) Calculus (1)		80				5.0	1	No1.1, 2.1
	140192	微积分 II (二) Calculus (2)		80				5.0	2	No1.1, 2.1
	141001	大学物理 I (一) General Physics I (1)		48				3.0	2	No1.2, 2.2
	141002	大学物理 I (二) General Physics I (2)		48				3.0	3	No1.2, 2.2
	141007	大学物理实验 (一) Physics Experiment (1)		32			32	1.0	2	No2.4, 4.2
	141008	大学物理实验 (二) Physics Experiment (2)		32			32	1.0	3	No2.4, 4.3
	147045	大学化学 I General Chemistry I		32				2.0	1	No1.2, 2.2
	147036	大学化学实验 Chemistry Experiment		16			16	0.5	2	No2.4, 4.4
	140197	线性代数与解析几何 Linear Algebra&Analytic Geometry		48				3.0	1	No1.1, 2.1
	140019	概率论与数理统计 Probability & Mathematical Statistics		48				3.0	2	No2.1, 4.1
	130199	画法几何及建筑制图 (一) Descriptive Geometry & Architecture Drawing (1)		48				3.0	1	No2.3, 4.5

	130200	画法几何及建筑制图（二） Descriptive Geometry & Architecture Drawing (2)		32				2.0	2	№2.3, 4.6
	145268	C++程序设计基础 C++ Design Program Fundamental		48				3.0	2	№5.3
		人文科学领域 Humanities	通识课 E	96				6.0		№8.2
		社会科学领域 Social Science		64				4.0		№8.2
	合 计 Total			1148		80	128	73.5		

三、专业教学计划表（续）（Teaching Schedule）

类别 Course Category	课程代码 Course No.	课程名称 Course Title	是否必修 C/E	学时数 Total Curriculum Hours				学分 Credits	开课学期 Semester	毕业要求 Student Outcomes
				总学时 Class Hours	上机 Computer-aided Class Hours	实验 Lab Hours	实践 Practice			
学科基础课 Disciplinary Basic Courses	135082	电工学基础 Fundamentals of Electrical Engineering	必C	40		8		2.5	3	№1.2, 4.5
	132189	土木工程概论 An Introduction to Civil Engineering	必C	16				1.0	1	№3.6, 12.2
	132065	土木工程材料 Materials for Civil Engineering	必C	48		10		3.0	3	№1.3, 4.3
	132161	工程测量 Surveying	必C	48		9		3.0	4	№3.3, 9.2
	133100	理论力学 I Theoretical Mechanics I	必C	64				4.0	2	№1.3, 2.3
	133497	材料力学IV Mechanics of Materials IV	必C	64		6		4.0	3	№1.3, 2.3
	132231	结构力学 Structural Mechanics	必C	64				4.0	4	№1.3, 2.3
	132220	流体力学 Fluid Mechanics	必C	40		6		2.5	4	№1.3, 2.3
	132074	土力学 Soil Mechanics	必C	48		8		3.0	5	№1.3, 2.3
	132077	混凝土结构理论 Theory of Concrete Structures	必C	64				4.0	5	№1.4, 2.4
	132078	钢结构理论 Theory of Steel Structures	必C	40				2.5	6	№1.4, 2.4,
	132213	荷载及设计原则 Loads and Design Principles	必C	24				1.5	4	№3.1, 5.1
	132100	土木工程施工 Civil Engineering Construction	必C	64				4.0	6	№1.4, 6.1
	133045	工程地质 Geological Engineering	必C	32		6		2.0	4	№1.4, 6.1
	132093	基础工程 Foundation Engineering	必C	32				2.0	6	№1.4, 6.1
	133054	土木工程项目管理 Construction Project Management	必C	32				2.0	7	№10.4, 11.1
	132190	建设法规 Building Codes	必C	24				1.5	3	№6.2, 8.2
	132101	工程经济 Engineering Economics	必C	24				1.5	5	№11.3, 6.2
	132267	弹性力学 Elastic Theory	选E	32				2.0	5	№1.2, 2.3
132270	结构力学专题 Structural Mechanics – Special Topics	选E	32				2.0	5	№1.4, 2.4	

类别 Course Category	课程 代码 Course No.	课程名称 Course Title	是否 必修 C/E	学时数 Total Curriculum Hours				学分 数 Credits	开课 学期 Semester	毕业 要求 Student Outcomes
				总学 时 Class Hours	上机 Comp uter-ai ded Class Hours	实验 Lab Hours	实践 Practi ce			
	133315	土木工程学科讲座 Seminars in Civil Engineering	选 E	(16)				0.5	1~4	№6.1,6.2 , 7.3
	133434	环境保护概论 Introduction to Environmental Protection	选 E	16				1.0	3	№6.2,7.1
	合 计 Total			必 C	768		53	48.0		
				选 E	选修课与专业领域选修课一起修读最低要求:23.5 学分) minimum elective course credits required:25 credits					

三、专业教学计划表（续）（Teaching Schedule）

类别 Course Category	课程 代码 Course No.	课程名称 Course Title	是否 必修 C/E	学时数 Total Curriculum Hours				学分 数 Credits	开课 学期 Semester	毕业 要求 Student Outcomes
				总学 时 Class Hours	上机 Comp uter-ai ded Class Hours	实验 Lab Hours	实践 Practice			
专业领域课 Specialty-related Courses	建筑工程方向 Building Engineering Direction	132137 房屋建筑学** Building Science	选 E	40				2.5	5	№1.3,2.3
		132079 砌体结构** Masonry Structures	选 E	16				1.0	5	№1.3,2.3
		132273 混凝土结构设计** Concrete Structural Design	选 E	32				2.0	6	№3.2,4.1
		133166 钢结构设计** Steel Structural Design	选 E	24				1.5	7	№3.2,4.4
		132080 建筑结构抗震与防灾** Hazard Mitigation for Buildings	选 E	32		4		2.0	7	№1.4,2.3
		133468 建筑结构试验原理 Structural Test Theory	选 E	16				1.0	6	№1.4,2.3
		132256 工程结构综合实验** Integrated Test of Structures	选 E	16		16		0.5	6	№4.6
		133348 建设工程造价管理（建筑工程）** Construction Project Estimation	选 E	24				1.5	7	№10.1,11.2
		133383 高层建筑结构设计（一）** Structural Design for High-rise Buildings (1)	选 E	16				1.0	7	№3.3,4.2
		133384 高层建筑结构设计（二） Structural Design for High-rise Buildings (2)	选 E	16				1.0	7	№3.3,4.3
		132271 结构稳定与极限 Stability & limit Analysis of Structures	选 E	24				1.5	5	№1.4,2.3
		133323 建筑结构 CAD** Structural Design – CAD	选 E	24	8			1.5	7	№3.4,5.2
		132088 建筑结构选型 Building Structural Forms	选 E	24				1.5	7	№2.4,3.5
		132105 建设工程监理 Construction Project Supervision	选 E	24				1.5	5	№2.4,11.3
		132083 组合结构设计原理 Design Theory of Composite Structures	选 E	24				1.5	7	№1.4,2.3

		合 计 Total		选 E	(选修课与学科基础选修课一起修读最低要求 23.5 学分) minimum elective course credits required: 23.5 credits						
专业领域课 Specialty-related Courses	地下结构方向	132273	混凝土结构设计** Concrete Structural Design	选 E	32				2.0	6	№3.2,4.1
		132097	地基处理** Foundation Treatment	选 E	24				1.5	6	№1.4, 2.4
		132096	基坑支护** Excavation Engineering	选 E	24				1.5	6	№1.4, 3.4
		132075	岩石力学** Rock Mechanics	选 E	24				1.5	6	№1.3, 3.1
		132098	地下建筑结构** Underground Structural Design	选 E	24				1.5	7	№2.3, 3.3
		133385	岩土工程测试与监测技术** ---Testing & Monitoring Technology	选 E	32				2.0	7	№4.3, 5.1
		133293	岩土工程勘察** Geotechnical Engineering --- Surveying	选 E	24				1.5	7	№1.4, 4.1
		133348	建设工程造价管理（建筑工程）** Construction Project Estimation	选 E	24				1.5	7	№10.2,11.2
		132137	房屋建筑学 Building Science	选 E	40				2.5	5	№1.3,2.3
		133292	特种基础工程** Foundation Engineering – Special Topics	选 E	24				1.5	7	№1.3, 3.2
		133307	水文地质 Hydrogeology Theory	选 E	24				1.5	5	№1.3, 2.3
		133118	隧道工程 Tunnel Engineering	选 E	24				1.5	5	№1.3, 3.2
		133386	边坡工程 Slope Engineering	选 E	24				1.5	7	№1.3, 3.2
		133387	地下工程施工技术 Underground Construction Techniques	选 E	24				1.5	7	№1.4, 3.4
		133289	地下铁道 Underground Railway	选 E	24				1.5	7	№1.4, 3.2
		132099	环境岩土工程 Environmental Geotechnical Engineering	选 E	16				1.0	7	№2.4, 7.2
		合 计 Total		选 E	(选修课与学科基础选修课一起修读最低要求 23.5 学分) minimum elective course credits required:23.5 credits						
专业领域课 Specialty-related Courses	道路与桥梁工程方向	133043	道路勘测设计** Road Reconnaissance Survey and Design	选 E	56				3.5	5	№3.1, 6.1
		133115	桥梁工程** Bridge Engineering	选 E	64				4.0	6	№1.3,3.1
		133308	路基工程** Subgrade Engineering	选 E	32		4		2.0	6	№1.3,3.2
		133309	路面工程** Pavement Engineering	选 E	32		4		2.0	6	№1.3,3.2
		133326	钢桥** Steel Bridges	选 E	24				1.5	7	№1.4, 3.2

		133349	建设工程造价管理（道路与桥梁工程）** Construction Project Estimation for Roads and Bridges	选E	24				1.5	7	№10.3,11.2
		133389	桥梁结构综合试验** Integrated Test of Bridges	选E	24		12		1.0	7	№2.4, 4.6
		133204	桥涵水文** Hydrology and Hydraulics for Bridges Engineering	选E	24				1.5	5	№2.3, 7.2
		133118	隧道工程** Tunnel Engineering	选E	32				2.0	5	№1.3, 3.2
		133388	桥梁抗震抗风设计 Wind and Seismic Design of Bridges	选E	16				1.0	7	№3.3, 9.1
		133271	大跨度桥梁 Long-span Bridges	选E	24				1.5	7	№1.4, 3.2
		133351	桥梁工程 CAD Bridge Design – CAD	选E	24	8			1.5	7	№3.4, 5.2
		133476	道路工程 CAD Roads Design – CAD	选E	24	12			1.0	7	№3.4, 5.2
		133266	交通工程概论 An Introduction to Transportation Engineering	选E	24				1.5	7	№1.3, 3.6
		133049	路面养护与管理 Pavement Maintenance & Management	选E	24				1.5	6	№4.1, 5.3
		133215	城市立交与道路规划 Urban Traffic Design and Planning	选E	24				1.5	7	№6.2, 3.3
		133219	公路小桥涵勘测设计 Reconnaissance and Design of Small Bridge and Culvert	选E	24				1.5	7	№3.5, 9.2
		合计 Total		选E	(选修课与学科基础选修课一起修读最低要求 23.5 学分) minimum elective course credits required:23.5 credits						
专业领域课 Specialty-related Courses	专业公共选修课	133324	土木工程材料设计性实验 Design Test of Civil Engineering Materials	选E	16		16		0.5	3	№2.4, 4.2
		133493	土木工程与人类生活 Civil Engineering and human life	选E	16				1	2	№7.2, 8.1
		133405	工程管理 IT 技术 IT Technology of Project Management	选E	24				1.5	4	№11.4,12.3
		133393	结构模型概念与实验 Structural Model Analysis & Experiments	选E	16		8		1.0	4, 6	№4.6, 9.1, 10.3
		133500	振动台试验结构模型设计与测试方法 Structural Model Design and Test Method of Shaking Table Experiment	选E	16		16		0.5	7	№4.6,9.1, 10.3
		133350	建筑结构检测与加固 Building Inspection and Reinforcement	选E	16				1.0	7	№2.3, 3.3
		132089	大跨度空间结构 Long-span Structures Design	选E	16				1.0	7	№1.4, 3.2
		132111	高层建筑施工 High-rise Building Construction	选E	16				1.0	7	№1.4, 3.2
		132109	建设项目策划 Construction Project Planning	选E	16				1.0	6	№2.3, 4.1

132106	房地产开发与经营 Real Estate Development & Management	选 E	24				1.5	5	№5.4, 6.1
132272	建设工程招投标 Construction Project Bidding	选 E	16				1.0	5	№6.2, 8.2
132221	水文学 Hydrology	选 E	24				1.5	5	№1.3, 7.2
132129	桥梁工程概论 An Introduction to Bridge Engineering	选 E	24				1.5	6	№3.6, 6.2
133042	道路工程概论 An Introduction to Roadway Engineering	选 E	24				1.5	6	№3.6, 6.2
133117	桥梁检测技术 Bridge Inspection Techniques	选 E	24		8		1.5	6	№4.3, 5.3
133116	桥梁美学 Bridge Aesthetics	选 E	16				1.0	7	№1.3, 7.3
133390	桥梁维修与加固 Bridge Maintenance & Reinforcement	选 E	16				1.0	7	№3.3, 7.1
133316	现代道路测设技术 Modern Roadway Testing Technology	选 E	24				1.5	6	№4.4, 5.1
133252	地理信息系统 Information System of Transportation geography	选 E	24				1.5	7	№4.5, 11.4
133319	城市轨道交通概论 An Introduction to Railway Transportation	选 E	24				1.5	7	№3.6, 7.3
133391	岩土工程渗流 Geotechnical Engineering Seepage	选 E	24				1.5	6	№1.3, 3.1
133444	土木工程产业模式与创业 Civil Engineering Entrepreneurship	选 E	16				1.0	7/8	№9.2, 10.4, 11.3
133501	弹性力学与有限元法（本硕） Theory of Elastic Mechanics and FEM	选 E	48				3.0	7	№1.3, 5.3
133498	高等钢筋混凝土结构（本硕） Advanced Theory of Concrete Structures	选 E	32				2.0	7/8	№1.4, 3.2
133499	高层建筑风效应及控制 Wind Effect & Control for High-rise Buildings	选 E	16				1.0	6/7	№1.4, 4.5
133502	结构优化专题 Structure Optimization -Special Topics	选 E	16				1.0	6/7	№3.5, 4.5
120003	创新研究训练 Innovation Research Training	选 E	32				2.0		№3.5, 12.1
120004	创新研究实践 I Innovation Research Practice I	选 E	32				2.0		№3.4, 4.6
120005	创新研究实践 II Innovation Research Practice II	选 E	32				2.0		№10.2, 12.3
120006	创业实践 Entrepreneurial Practice	选 E	32				2.0		№9.3, 12.2
合计 Total		选 E	(选修课与学科基础选修课一起修读最低要求 23.5 学分) minimum elective course credits required:23.5 credits						

备注：学时中上机和实验为校内，实践为校外。学生根据自己开展科研训练项目、学科竞赛、发表论文、获得专利和自主创业等情况申请折算为一定的专业选修课学分（创新研究训练、创新研究实践 I、创新研究实践 II、创业实践等创新创业课程）。每个学生累计申请为专业选修课总学分不超过 4 个学分。经学校批准认定为选修课学分的项目、竞赛等不再获得对应第二课堂的创新学分。

四、集中实践教学环节(Practice-concentrated Training)

类别	课程代码 Course No	课程名称 Course Title	是否必修 C/E	学时数 Total Curriculum Hours		学分 Credits	开课学期 Semester	毕业要求 Student Outcomes
				实践 Practice weeks	授课 Lecture Hours			
所有专业方向	106002	军训 Military Training	必 C	3 周		3.0	1	№9.1, 10.4
	143197	马克思主义理论与实践 Marxism Theory and Practice	必 C	2 周		2.0	假期	№8.1, 12.1
	132139	认识实习 Cognition Practice	必 C	1 周		1.0	3	№3.6, 9.3
	132160	测量实习 Surveying Practice	必 C	2 周		2.0	4	№, 5.1, 7.1
	132191	工程地质实习 Geological Engineering Practice	必 C	1 周		1.0	5	№ 4.2, 7.2
	133220	生产实习 Construction Practice	必 C	3 周		3.0	7	№6.1, 7.3
	133257	毕业实习 Graduation Practice	必 C	2 周		1.0	8	№3.3, 12.2
	合计 Total			必 C	14 周		14.0	
			选 E	选修课修读最低要求 学分 minimum elective course credits required:				
建筑工程方向	132216	房屋建筑学课程设计 Design Course of Building Science	必 C	2 周		2.0	5	№3.3, 6.2
	132279	单层工业厂房设计 Design Course of Single-story Factory	必 C	1 周		1.0	6	№3.3, 6.2
	132278	混合结构课程设计 Design Course of Composite Structures	必 C	2 周		2.0	6	№3.3, 4.3
	132134	土木工程施工课程设计 Practice Course of Civil Engineering Construction	必 C	1 周		1.0	6	№2.4, 3.4
	133352	建设工程造价课程设计（建筑工程） Practice Course of Construction Estimation	必 C	1 周		1.0	7	№5.2, 11.4
	133286	基础工程课程设计 Design Course of Foundation Engineering	必 C	1 周		1.0	7	№3.3, 4.3
	132140	钢结构课程设计 Design Course of Steel Structures	必 C	1 周		1.0	8	№3.3, 4.5
	133273	毕业设计 Graduation Design Course	必 C	14 周		14.0	8	№3.5, 12.3
	合计 Total			必 C	23		23.0	
			选 E	选修课修读最低要求 学分 minimum elective course credits required:				
地下结构方向	132278	混合结构课程设计 Design Course of Composite Structures	必 C	2 周		2.0	6	№3.3, 4.3
	132134	土木工程施工课程设计 Practice Course of Civil Engineering Construction	必 C	1 周		1.0	6	№2.4, 3.4
	133352	建设工程造价课程设计（建筑工程） Practice Course of Construction Estimation	必 C	1 周		1.0	7	№5.2, 11.3
	133286	基础工程课程设计 Design Course of Foundation Engineering	必 C	1 周		1.0	7	№3.3, 4.3

	133445	基坑支护设计 Design Course of Foundation Pit Bracing	必 C	1 周		1.0	6	№3.4, 5.3
	133446	地下工程设计 Design Course of Underground Engineering	必 C	2 周		2.0	7	№3.4, 5.3
	133273	毕业设计 Graduation Design Course	必 C	15 周		15.0	8	№3.5, 12.3
	合 计 Total		必 C	23 周		23.0		
			选 E	选修课修读最低要求 学分 minimum elective course credits required:				
道路 与桥 梁工 程方 向	133208	钢筋混凝土结构课程设计 Design Course of Concrete Structures	必 C	1 周		1.0	6	№3.4, 5.2
	133353	建设工程造价课程设计（道路与桥梁工程） Practice Course of Construction Estimation	必 C	1 周		1.0	7	№5.2, 11.3
	133286	基础工程课程设计 Design Course of Foundation Engineering	必 C	1 周		1.0	7	№2.4, 3.43.3
	133243	道路勘测课程设计 Design Course of Roadway Survey	必 C	1 周		1.0	5	№3.4, 10.1
	133394	道路勘测实习 Practice of Roadway Survey	必 C	1 周		1.0	5	№ 5.1, 10.1
	133245	桥梁工程课程设计 Design Course of Bridge Engineering	必 C	1 周		1.0	6	№, 3.4, 4.5
	133320	路基工程课程设计 Design Course of Subgrade Engineering	必 C	1 周		1.0	6	№, 3.4, 4.6
	133321	路面工程课程设计 Design Course of Pavement Engineering	必 C	1 周		1.0	6	№, 3.4, 4.6
	133395	道路与桥梁施工组织设计 Design Course of Roadway and Bridge Construction	必 C	1 周		1.0	7 或 8	№3.4, 4.6
	133273	毕业设计 Graduation Design Course	必 C	14 周		14.0	8	№3.5, 12.3
	合 计 Total		必 C	23 周		23.0		
			选 E	选修课修读最低要求 学分 minimum elective course credits required:				

说明：1.“**”为专业指导委员会建议的课组核心课程；2.学生二年级选定专业课后，必须系统修读该课组的核心课程和实践环节，然后修读 3 门以上其他课组或专业公共选修课程；3.一般毕业设计方向应与选定的专业课组一致。

五、第二课堂

第二课堂由人文素质教育和创新能力培养两部分组成。

1.人文素质教育基本要求

学生在取得专业教学计划规定学分的同时，还应结合自己的兴趣适当参加课外人文素质教育活动，参加活动的学分累计不少于 2 个学分。

2.创新能力培养基本要求

学生在取得本专业教学计划规定学分的同时，还必须参加国家创新创业训练计划或广东省创新创业训练计划或 SRP（学生研究计划）或百步梯攀登计划或一定时间的各类课外创新能力培养活动（如学科竞赛、学术讲座等），参加活动的学分累计不少于 4 个学分。

5. “Second Classroom” Activities

“Second Classroom” Activities are comprised of two parts, Humanities Quality Education and Innovative Ability Cultivation.

1)Basic Requirements of Humanities Quality Education

Besides gaining course credits listed in one's subject teaching curriculum, a student is required to participate in extracurricular activities of Humanities Quality Education based on one's interest, acquiring no less than two credits.

2)Basic Requirements of Innovative Ability Cultivation

Besides gaining course credits listed in one's subject teaching curriculum, a student is required to participate in any one of the following activities: National Undergraduate Training Programs for Innovation and Entrepreneurship, Guangdong Undergraduate Training Programs for Innovation and Entrepreneurship, Student Research Program (SRP), One-hundred-steps Innovative Program, or any other extracurricular activities of Innovative Ability Cultivation that last a certain period of time (e.g. subject contests, academic lectures), acquiring no less than four credits.