

水利水电工程

Hydraulic and Hydropower Engineering

专业代码：081101

学制：4年

Program Code: 081101

Duration: 4 years

培养目标:

本专业培养适应社会主义现代化建设发展需要，德、智、体、美全面发展，具有扎实的自然科学、人文科学基础，具备外语和计算机应用技能，获得工程师的基本训练，具有一定的国际视野和国际交往能力，掌握水利水电工程勘测、规划、设计、施工、科研和管理等方面基本知识与技能，具有全国一流水平和创新、创造、创业精神的高级专门人才。

Educational Objectives:

This major aims to cultivate an ability to adapt the Socialist modernization needs and satisfy the integrated development in moral, intellectual, physical and beauty; an ability to acquire a solid foundation for natural science and humane studies; an ability to acquire fundamental training of engineer and certain international view and international communication; an ability to grasp basic knowledge and professional skill on reconnaissance, plan, design, construct, scientific research and management of hydraulic and hydropower engineering; an ability to become an advanced specialized talents with first-class in China and spirits of innovation, creation and entrepreneurship.

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复杂水利水电工程问题。

- 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，并为解决复杂水利水电工程问题奠定扎实的理论基础。

№2.问题分析: 能够应用数学、自然科学和水利水电工程学科的基本原理，识别、表达、并通过文献研究分析水利水电工程复杂问题，以获得有效结论。

- 2.1 能够应用数学基础知识进行工程复杂问题分析、识别、表达的能力。
- 2.2 能够应用自然科学基础知识进行工程复杂问题分析、识别、表达的能力。
- 2.3 能够应用专业基础知识进行工程复杂问题分析、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: 能够设计针对水利水电工程复杂问题的解决方案，设计满足特

定需求的结构、构件或施工流程，并能够在设计环节中体现创新意识，考虑社会、健康、安全、法律、文化以及环境等因素。

- 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 了解水利水电工程专业现状、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水利水电工程复杂问题进行研究，包括设计实验、分析与解释数据、并通过信息综合得到合理有效的结论。

- 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 and 了解。

№5.使用现代工具：能够针对水利水电工程复杂问题，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，包括对水利水电工程复杂问题的预测与模拟，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：能够基于水利水电工程相关背景知识进行合理分析，评价水利水电工程实践和水利水电工程复杂问题解决方案对社会、健康、安全、法律以及文化的影响，并理解应承担的责任。

- 6.1 培养评价水利水电工程实践和复杂问题解决方案对社会、健康、安全、法律以及文化的影响的基本能力。
- 6.2 树立水利水电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水利水电工程复杂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规范。

№9.个人和团队：能够在多学科背景下的团队中承担个体、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：能够就水利水电工程复杂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：理解并掌握水利水电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。

№12.终身学习：具有自主学习和终身学习的意识，有不断学习和适应发展的能力。

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 学习实践和自我评价。

Student Outcomes:

№1.Engineering Knowledge: An ability to apply knowledge of mathematics, science, engineering fundamentals and engineering specialization to the solution of complex problems of Hydraulic and Hydropower Engineering.

№2.Problem Analysis: An ability to identify, formulate and analyze complex problems of Hydraulic and Hydropower Engineering, reaching to substantiated conclusions using basic principles of mathematics, science, and engineering.

№3.Design / Development Solutions: An ability to design solutions for complex problems of Hydraulic and Hydropower Engineering and innovatively design systems, components or process

that meet specific needs with societal, public health, safety, legal, cultural and environmental considerations.

№4.Research: An ability to conduct investigations of complex problems of Hydraulic and Hydropower Engineering based on scientific theories and adopting scientific methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.

№5.Applying Modern Tools: An ability to create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex activities of Hydraulic and Hydropower Engineering, with an understanding of the limitations.

№6.Engineering and Society: An ability to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.

№7.Environment and Sustainable Development: An ability to understand and evaluate the impact of professional engineering solutions in environmental and societal contexts and demonstrate knowledge of and need for sustainable development.

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

№9.Individual and Teams: An ability to function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.

№10.Communication: An ability to communicate effectively on complex problems of Hydraulic and Hydropower Engineering with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, give and receive clear instructions, and communicate in cross-cultural contexts with international perspective.

№11.Project Management: Demonstrate knowledge and understanding of engineering management principles and methods of economic decision-making, to function in multidisciplinary environments.

№12.Lifelong Learning: A recognition of the need for, and an ability to engage in independent and life-long learning with the ability to learn continuously and adapt to new developments.

专业简介:

水利水电工程系是1952年华南工学院建校之始设立的六大学系之一,1954年水利系(科)调至武汉参与组建武汉水利电力学院,1970年原广东工学院的农田水利工程专业并入,开设农田水利工程专业,后改为水利水电工程专业。长期以来,水工专业归属土木工程系管理。为适应现代水利发展及水利学科发展的需要,2008年初在土木与交通学院成立之时恢复设

立水利水电工程系。从建校至今，水利水电工程专业已培养水利工程设计、施工和管理方面的高级技术人才数千人，在华南地区具有较大的影响。水利水电工程系设有水工教研室、水力学教研室、水文及水资源教研室，在本学院内有材料实验室、水工水力学实验室、港口与航道实验室、土力学实验室、结构实验室等，教学与科研条件良好。水利工程学科目前共有 18 名专职教师，另外，还聘请有 7 位兼职硕士导师，分别来自于广东省水利水电科学研究院、水利部珠江水利委员会等单位的学科带头人和富有工程经验的教授级高级工程师。

Program Profile:

As one of the six major initial departments in South China Institute of Technology, the department of Hydraulic and Hydropower Engineering was constructed in 1952. Whereafter, the department was moved to Wuhan City to construct the Wuhan Institute of Hydraulic and Electric Engineering in 1954. In 1970, the major of agricultural hydraulic engineering from Guangdong institute of technology was merged into the South China Institute of Technology and was renamed as Hydraulic and Hydropower Engineering. The new major belonged to department of civil engineering for a long time. In order to adapt the development of modern water conservancy and hydraulic engineering science, the department of Hydraulic and Hydropower Engineering was recovered in 2008 when the School of Civil Engineering and Transportation was constructed. The major of Hydraulic and Hydropower Engineering has already cultivated thousands of high-level technical talents on design, construction and management of water conservancy project since the South China University of Technology was constructed, presenting a great influence in South China.

The department of Hydraulic and Hydropower Engineering includes teaching and research sections of hydraulic structure, hydraulics, hydrologic and water resources. The School of Civil Engineering and Transportation presents favorable conditions on teaching and scientific research, including material laboratory, engineering hydraulics laboratory, port and waterway laboratory, soil mechanics laboratory and structural laboratory. Currently, the major recruits approximately 60 undergraduates and 12 postgraduate students per year, constructing an important base of talent cultivation in South China.

There are a total of 18 full-time teachers in this subject at present, including 5 professor, 6 associate professors, 6 lecturers and 1 teaching postdoctor. Among the teachers, more than 50% of them are under the age of 45. Additionally, 7 teachers are invited as part-time master tutors who are from Guangdong Research Institute of Water Resources and Hydropower and Pearl River Water Resources Commission of the Ministry of Water Resources.

专业特色:

本专业部分课程采用全英及双语教学，开设科技前沿专题和部分创新课程，以培养学生

的创新精神和实践能力为核心，坚持学-研-产一体化培养模式，培养满足国家和华南地区水利工程建设需求，同时具有国际视野的高素质专门人才。

Program Features:

Partial course of this major are taught in either English or bilingual Chinese-English. Special topic of front of science and technology and partial innovative courses are also set up. The core of this major is to cultivate the students' innovation spirit and practical ability with the cultivating mode of learning, research and production. The major aims to cultivate high quality specialized talents who satisfy the needs of hydraulic engineering construction in China especially in South China and who have international view.

授予学位：工学学士学位

Degree Conferred: Bachelor of Engineering

主干课程：

水力学、土力学、材料力学、结构力学、水工钢筋混凝土结构、工程水文学、水资源规划及利用、水利水电工程施工、水工建筑物、水电站建筑物、水环境保护导论。

Core Courses:

Hydraulics, Soil Mechanics, Mechanics of Materials, Structural Mechanics, Hydraulic Reinforced Concrete Structure, Engineering Hydrology, Water Resources Planning and Utilization, Construction of Hydraulic Engineering, Hydraulic Structure, Structure of Hydroelectric Power Station, Introduction of Water Environment Protection.

特色课程：

全英语教学课程：土力学、近海工程

双语教学课程：水利工程概论、弹性力学

研究型课程：水利信息化、有限元及工程软件应用、新能源技术

新生研讨课：能源与可持续发展

专题研讨课：水工专题

校企合作课：水利事业发展及个人职业规划讲座、认识实习、工程地质实习、毕业实习、毕业设计

专题设计课：水工钢筋混凝土结构课程设计、水资源规划及利用课程设计、水利施工课程设计、水工建筑物课程设计、水电站建筑物课程设计、工程水文学课程设计

创新实践课程：水力学实验

创业教育课程：水利事业发展及个人职业规划讲座

Featured Courses:

Courses Taught in English: Soil Mechanics, Offshore Engineering

Bilingual Courses: The guidance of Water Conservancy, Theory of Elasticity

Research Courses: Water Conservancy Informatization, Application to Finite Element and Engineering Software, New Energy Technology

Freshmen Seminars: Energy Resources and Sustainable Development

Special Topics: Special Topics of Water Conservancy Problem and Development

Baccalaureate-Master's Integrated Courses:

Cooperative Courses with Enterprises: Seminar of Water Conservancy Development and Personal Career Planning, Cognition Practice, Engineering Geology Practice, Graduation Field Work, Graduation Project

Contest-Teaching Integrated Courses: Course Design of Hydraulic Reinforced Concrete Structure, Course Design of Water Resources Planning and Utilization, Design of Water Conservancy Engineering Construction Course, Curriculum Design for Hydraulic Structure, Course Design of Hydropower Station, Engineering Hydrology Course Design

Innovation Practice: Hydraulic experiment

Entrepreneurship Courses: Seminar of Water Conservancy Development and Personal Career Planning

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	大 作 业	工 程 训 练	电 子 实 习	综 合 实 验	社 会 实 践	生 产 实 习	毕 业 实 习	其 它 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	Q	J	B	B	16	2												1			20														
二	3	A	A	A	A	A	A	A	A	A	A	A	A	A	A	M	M	B	B	16	2									2						20														
	4	A	A	A	A	A	A	A	A	A	A	A	A	A	A	M	M	B	B	16	2								2								20													
三	5	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E	E	E	B	B	15	2			3												20													
	6	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E	E	E	B	B	15	2			3													20												
四	7	A	A	A	A	A	A	A	A	A	A	A	A	L	L	L	Q	E	B	B	13	2			1						3				1			20												
	8	E	E	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Q	P	P					2								15	2	1			20												
		合 计 (周)																			105	13	1	3	9																1	3	4		15	2	3			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	65.5	1020	
	通识 General Education	10.0	160	
学科基础课 Disciplinary Basic Courses	必修 Compulsory	39.5	640	
	选修 Elective	5.5	88	
专业领域课 Specialty- related Courses	必修 Compulsory	14.5	232	
	选修 Elective	9.0	144	
合 计 Total		144.0	2284	
集中实践教学环节（周） Practice Training (Weeks)		36.0	36 周	
毕业学分要求 Credits Required for Graduation	144.0+36.0=180			

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	
2284	1892	392	2001	283	180	155.5	24.5	36	135	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 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 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 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	No8.2
	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	No8.1
	143094	形势与政策 Analysis of the Situation & Policy		(128)				2.0	1-8	No8.1
	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	No12.3
	152002	体育 (二) Physical Education (2)		32			32	1.0	2	No12.3
	152003	体育 (三) Physical Education (3)		32			32	1.0	3	No12.3
	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	No9.3
	140191	微积分 II (一) Calculus(1)		80				5.0	1	No1.1
	140192	微积分 II (二) Calculus(2)		80				5.0	2	No1.1
	141005	大学物理III (一) General Physics (1)		64				4.0	2	No1.2
	141006	大学物理III (二) General Physics (2)		64				4.0	3	No1.2
	141007	大学物理实验 (一) Physics Experiment(1)		32		32		1.0	2	No1.2
	141008	大学物理实验 (二) Physics Experiment(2)		32		32		1.0	3	No1.2
	147045	大学化学 I General Chemistry		32				2.0	1	No1.2
147036	大学化学实验 General Chemistry Experiment	16		16		0.5	2	No1.2		
140197	线性代数与解析几何 Linear Algebra & Analytic Geometry	48				3.0	1	No1.2		

	140019	概率论与数理统计 Probability & Mathematical Statistics		48				3.0	2	№1.1
	130199	画法几何及建筑制图（一） Descriptive Geometry & Architecture Drawing (1)		48				3.0	1	№1.3
	130200	画法几何及建筑制图（二） Descriptive Geometry & Architecture Drawing (2)		32				2.0	2	№1.3
	145268	C++程序设计基础 C++ Programming Foundations		48				3.0	2	№5.1
		人文科学领域 Humanities	通 识 课 E	96				6.0		№8.1
		社会科学领域 Social Science		64				4.0		№8.1
		科学技术领域 Science and Technology								№8.2
	合 计 Total			1180		80	128	75.5		

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 数 Credits	开 课 学 期 Semest er	毕 业 要 求 Student Outcom es
				总 学 时 Class Hours	上 机 Computer-a ided Class Hours	实 验 Lab Hours	实 践 Practice			
学科基础课 Disciplinary Basic Courses	132065	土木工程材料 Civil Engineering Materials	必 C	32		10		2.0	4	№1.3
	135082	电工学基础 Fundamentals of Electrical	必 C	40		8		2.5	4	№1.4
	132188	水利工程概论 The Guidance of Water Conservancy (Bilingual)	必 C	16				1.0	1	№1.3
	133057	工程测量学 Engineering surveying	必 C	40		9		2.5	3	№5.4
	133100	理论力学 I Theoretical Mechanics	必 C	64				4.0	2	№1.2
	133045	工程地质 Engineering Geology	必 C	32		6		2.0	4	№1.2
	133288	材料力学 II Mechanics of Materials	必 C	72		8		4.5	3	№1.2
	132125	工程水文学 Engineering Hydrology	必 C	32				2.0	3	№1.3
	132231	结构力学 Structural Mechanics	必 C	64				4.0	4	№1.2
	132070	水力学（I） Hydraulics I	必 C	40				2.5	4	№1.3
	132192	土力学 Soil Mechanics (English)	必 C	48		8		3.0	5	№1.3

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 Semest er	毕业 要求 Student Outcom es	
				总学 时 Class Hours	上机 Computer-a ided Class Hours	实验 Lab Hours	实践 Practice				
	132232	水工钢筋混凝土结构 Hydraulic Reinforced Concrete Structure	必 C	64		10		4.0	5	№1.4	
	132071	水力学（II） Hydraulics II	必 C	32				2.0	5	№1.3	
	132122	水工钢结构 Hydraulic Steel Structure	必 C	32				2.0	6	№1.4	
	133396	水环境保护导论 Introduction of Water Environment Protection	必 C	16				1.0	3	№7.3	
	133504	水力学实验 Hydraulic Experiment	必 C	16		16		0.5	5	№1.4	
	132267	弹性力学 Theory of Elasticity (Bilingual)	选 E	32				2.0	6	№1.3	
	132266	工程概预算 Budget for the Hydraulic Project	选 E	24				1.5	6	№11.3	
	132126	水利工程经济 Hydraulic engineering economy	选 E	24				1.5	4	№2.4	
	132190	建设法规 Construction Laws	选 E	24				1.5	3	№8.1	
	133435	水利事业发展及个人职业规划 讲座 Seminar of Water Conservancy Development and Personal Career Planning	选 E	16				1.0	6	№8.2	
	133464	能源与可持续发展 Energy Resources and Sustainable Development	选 E	16				1.0	2	№7.1	
	132076	荷载及设计原则 Load and structure design principle	选 E	24				1.5	6	№1.4	
	133487	生态水利理论及应用 Theory and Application of Ecological Hydraulic Engineering	选 E	24				1.5	5	№7.3	
	合 计 Total			必 C	640			75		39.5	
				选 E	选修课修读最低要求 5.5 学分 minimum elective course credits required:5.5						
Special ty- related	132265	水资源规划及利用 Water Resources Planning and Utilization	必 C	48				3.0	5	№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 Semest er	毕业 要求 Student Outcom es
				总学 时 Class Hours	上机 Computer-a ided Class Hours	实验 Lab Hours	实践 Practice			
	132208	水利水电工程施工 Construction of Hydraulic Engineering	必	56				3.5	7	№1.4
	133291	水工建筑物 Hydraulic Structure	必	64				4.0	6	№1.4
	132115	水电站建筑物 Structure of Hydroelectric Power Station	必	64				4.0	7	№1.4
	133397	水利信息化 Water Conservancy Informatization	选 E	24				1.5	6	№5.3
	132261	城市水务 Urban Water Engineering	选 E	24				1.5	5	№1.3
	132123	港口水工建筑物 Harbor Engineering Structure	选 E	24				1.5	7	№3.6
	132259	水工建筑物安全监测 Safety Monitoring of Hydraulic Building	选 E	24				1.5	7	№2.4
	132269	工程项目管理 Engineering Project Management	选 E	24				1.5	5	№11.3
	133436	水工 CAD CAD for Hydraulic Engineering	选 E	16				1.0	6	№5.3
	133437	水工专题 Special Topics of Water Conservancy Problem and Development	选 E	32				2.0	7	№4.4
	132093	基础工程 Foundation Engineering	选 E	32				2.0	6	№1.4
	133488	水资源管理 Water Resource Management	选 E	24				1.5	7	№2.4
	133505	新能源技术 New Energy Technology	选 E	24				1.5	6	№2.3
	133506	工程体裁报告编写 Writing Skill of Engineering Reports	选 E	16				1.0	7	№1.4
	133507	有限元及工程软件应用 Application to Finite Element and Engineering Software	选 E	32				2.0	6	№5.2

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 Semest er	毕业 要求 Student Outcom es
				总学 时 Class Hours	上机 Computer-a ided Class Hours	实验 Lab Hours	实践 Practice			
	133508	土木水利工程检测 Test and Inspection of Civil and Hydraulic Engineering	选 E	24				1.5	6	№5.1
	133489	城市水文学 Urban Hydrology	选 E	16				1.0	5	№6.1
	133509	水泵与泵站 Pump and Pumping Station	选 E	24				1.5	6	№3.5
		近海工程 Offshore Engineering	选 E	24				1.5	7	№3.4
	120003	创新研究训练 Innovation Research Training	选 E	32				2.0		
	120004	创新研究实践 I Innovation Research Practice I	选 E	32				2.0		
	120005	创新研究实践 II Innovation Research Practice II	选 E	32				2.0		
	120006	创业实践 Entrepreneurial Practice	选 E	32				2.0		
	合 计 Total		必 C	232				14.5		
			选 E	选修课修读最低要求 9.0 学分 minimum elective course credits required: 9.0						

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)

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
			实践 Practice weeks	授课 Lecture Hours			
106002	军训 Military Training	必 C	3 周		3.0	1	№9.1
143197	马克思主义理论与实践 Marxism Theory and Practice	必 C	2 周		2.0	假期	№8.2
133269	认识实习 Cognition Practice	必 C	1 周		1.0	4	№6.2
133232	工程地质实习 Engineering Geology Practice	必 C	1 周		1.0	4	№6.1
132212	工程测量实习 Engineering Measurement Practice	必 C	2 周		2.0	3	№6.1

132280	水工钢筋混凝土结构课程设计 Course Design of Hydraulic Reinforced Concrete Structure	必 C	1 周		1.0	5	№3.4
132258	水资源规划及利用课程设计 Course Design of Water Resources Planning and Utilization	必 C	1 周		1.0	6	№3.4
132141	水利施工课程设计 Design of Water Conservancy Engineering Construction Course	必 C	1 周		1.0	7	№3.5
132257	水工建筑物课程设计 Curriculum Design for Hydraulic Structure	必 C	2 周		2.0	6	№3.5
132211	水电站建筑物课程设计 Course Design of Hydropower Station	必 C	2 周		2.0	8	№3.4
133400	工程水文学课程设计 Engineering Hydrology Course Design	必 C	2 周		2.0	5	№3.5
133257	毕业实习 Graduation Field Work	必 C	3 周		3.0	7	№10.1
133273	毕业设计 Graduation Project	必 C	15 周		15.0	8	№12.3
合 计 Total		必 C	36 周		36.0		
		选 E	选修课修读最低要求 学分 minimum elective course credits required:				

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.