

# 船舶与海洋工程专业（卓越班）2017 版本本科培养方案

## Undergraduate Education Plan for Specialty in Naval Architecture and Ocean Engineering (Excellent Engineer Class) (2017)

专业名称	船舶与海洋工程	主干学科	船舶与海洋工程
Major	Naval Architecture and Ocean Engineering	Major Disciplines	Naval Architecture and Ocean Engineering
计划学制	四年	授予学位	工学学士
Duration	4 Years	Degree Granted	Bachelor of Engineering

### 最低毕业学分规定

#### Graduation Credit Criteria

课程分类 Course Classification 课程性质 Course Nature	通识教育课程 Public Basic Courses	专业教育课程 Specialized Courses	个性课程 Personalized Course	集中性实践教学环节 Practice Courses	课外学分 Study Credit after Class	总学分 Total Credits
必修课 Required Courses	29	70.5	\	25.5	\	170
选修课 Elective Courses	9	20	6	\	10	

### 一、培养目标与毕业要求

#### *I Educational Objectives & Requirements*

##### (一) 培养目标

- (1) 身心健康，具备良好的敬业精神、社会责任感和工程职业道德，关注当代全球和社会问题，具有质量意识、环境意识和安全意识。
- (2) 具有从事船舶与海洋工程领域科学研究、工程设计、技术服务和管理等工作所需的较扎实的数学、力学等基础知识以及船舶与海洋工程专业知识。
- (3) 培养成为具有综合运用所学知识解决船舶与海洋工程设计与建造实际问题的较强能力的德才兼备的应用型卓越工程师。
- (4) 熟练掌握船舶与海洋工程相关研发、设计、制造过程所需的软硬件技术。
- (5) 具有良好的表达能力和沟通能力，具有良好的团队意识和合作精神，具有创新求实精神，具有国际视野和跨文化交流能力，具有主动适应学科发展和渗入其他学科领域的意识。

#### *Educational Objectives*

- (1) Students will be healthy physically and mentally, and possess a high level of professionalism, a good sense of social responsibility and professional ethics. They will focus on global and social issues, and have sense for quality, environment and safety.
- (2) Students will master basic knowledge of mathematics, mechanics et.al. and professional knowledge of naval architecture and ocean engineering that needed for jobs in naval architecture and ocean engineering such as scientific research, engineering design, technical service, management, and so on.

- (3) Students will have strong capabilities to solve the actual design and construction problems in the field of naval architecture and ocean engineering using the learned knowledge comprehensively, and will have good basis for being an excellent applicable engineer with sound virtue and ability in naval architecture and ocean engineering.
- (4) Students will master the necessary software and hardware technologies in the process of R&D, design, manufacture for naval architecture and ocean engineering.
- (5) Students will have good communication skill, expression ability, team work spirit, creative way of thinking and realistic spirit, international vision and inter-culture communication ability, and will have a good sense of fitting the development of discipline actively and infiltrating to other related disciplines.

## (二) 毕业要求

- (1) 工程知识：能够将数学、自然科学、工程基础和专业知用于解决船舶与海洋工程领域的复杂工程问题。
- (2) 问题分析：能够应用数学、自然科学和工程科学的基本原理，识别、表达、并通过文献研究分析船舶与海洋工程领域的复杂工程问题，以获得有效结论。
- (3) 设计/开发解决方案：能够设计针对船舶与海洋工程领域复杂工程问题的解决方案，设计满足特定需求的系统、单元（部件）或工艺流程，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。
- (4) 研究：能够基于科学原理并采用科学方法对船舶与海洋工程领域的复杂工程问题进行研究，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。
- (5) 使用现代工具：能够针对船舶与海洋工程领域的复杂工程问题，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，包括对复杂工程问题的预测与模拟，并能够理解其局限性。
- (6) 工程与社会：能够基于工程相关背景知识进行合理分析，评价专业工程实践和复杂工程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。
- (7) 环境和可持续发展：能够理解和评价针对复杂工程问题的专业工程实践对环境、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。
- (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。
- (10) 沟通：能够就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。
- (11) 项目管理：理解并掌握工程管理原理与经济决策方法，并能在多学科环境中应用。
- (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。

## ***Graduation Requirements***

- (1) Engineering Knowledge: The ability to solve complex engineering problems in the field of Naval Architecture and Ocean Engineering by using mathematics, natural science, and basic and professional engineering knowledge.
- (2) Problem Analysis: The ability to identify, express and analyze complex engineering problems in the field of Naval Architecture and Ocean Engineering through literature review by applying the basic principle of mathematics, natural science, and engineering science, in order to achieve valid conclusions.
- (3) Solution Design/Development: The ability to design solutions for complex engineering problems in the field of Naval Architecture and Ocean Engineering, and systems, units (components) or processes that meet specific requirement with creativity, considering the factors such as society, health, safety, law, culture and environment.
- (4) Research: The ability to investigate complex engineering problems in the field of Naval Architecture and Ocean Engineering based on scientific principle and methods, including experiment design, data analysis and interpretation, and valid and reasonable conclusions got from information integration.
- (5) Modern tool usage: The ability to develop, select and use appropriate technology, resources, modern engineering tools and information technology tools for complex engineering problems in the field of Naval Architecture and Ocean Engineering, including the prediction and simulation of the complex engineering problems and the understanding of their limitations.
- (6) Engineering and society: The ability to assess the influence of professional engineering practice and complex engineering problem solutions on the society, health, safety, law and culture according to reasonable analyses based on engineering related background knowledge, and to understand the responsibilities that should be undertaken.
- (7) Environment and sustainable development: The ability to understand and assess the influence of professional engineering practices for complex engineering problems on the sustainable development of the environment and society.
- (8) Professional norms: The possession of humanities social science accomplishment and social responsibility. And the ability to understand and comply with professional ethics and norms, and to and fulfill responsibilities in engineering practice.
- (9) Individual and team: The ability to take on the role of individual, team members and leaders in a multidisciplinary team.
- (10) Communication: The ability to effectively communicate and exchange with industry colleagues and the public on complex engineering problems, including writing of reports and design manuscripts, presentation, and clear express and response of instructions, and to communicate under the cross-cultural background with sufficient international perspective.
- (11) Project management: The understanding and acquiring of the engineering management principle and economic decision-making methods, which can be applied in the multi-disciplinary environment.
- (12) Lifelong learning: The consciousness of self-study and lifelong learning, and the ability to continue to learn and adapt to social development.

附：培养目标实现矩阵

	培养目标 1	培养目标 2	培养目标 3	培养目标 4	培养目标 5
毕业要求 1		√	√		
毕业要求 2			√	√	
毕业要求 3		√	√	√	
毕业要求 4			√	√	
毕业要求 5			√	√	
毕业要求 6	√	√			
毕业要求 7	√	√			
毕业要求 8	√				
毕业要求 9					√
毕业要求 10					√
毕业要求 11	√				√
毕业要求 12	√	√	√	√	√

## 二、专业核心课程与专业特色课程

### II Core Courses and Characteristic Courses

#### (一) 专业核心课程:

船体构造与制图、船舶流体力学、船舶结构力学、船舶静力学、船舶阻力、船舶推进、船舶操纵性与耐波性、船体强度与结构设计、船舶建造工艺学、船舶设计原理

Ship Structure and Graphing, Ship Fluid Mechanics, Ship Structural Mechanics, Ship Hydrostatics, Ship Resistance, Ship Propulsion, Ship Maneuverability and Seakeeping, Ship Strength and Structural Design, Ship Building Technology, Principles of Ship Design

#### (二) 专业特色课程:

船舶振动与噪声、海洋平台建造工艺、现代造船模式、人机工程与船舶美学

Ship Vibration and Noise, Offshore Platform Construction Technology, Modern Ship Manufacturing Mode, Ergonomics and Ship Aesthetics

附：毕业要求实现矩阵：

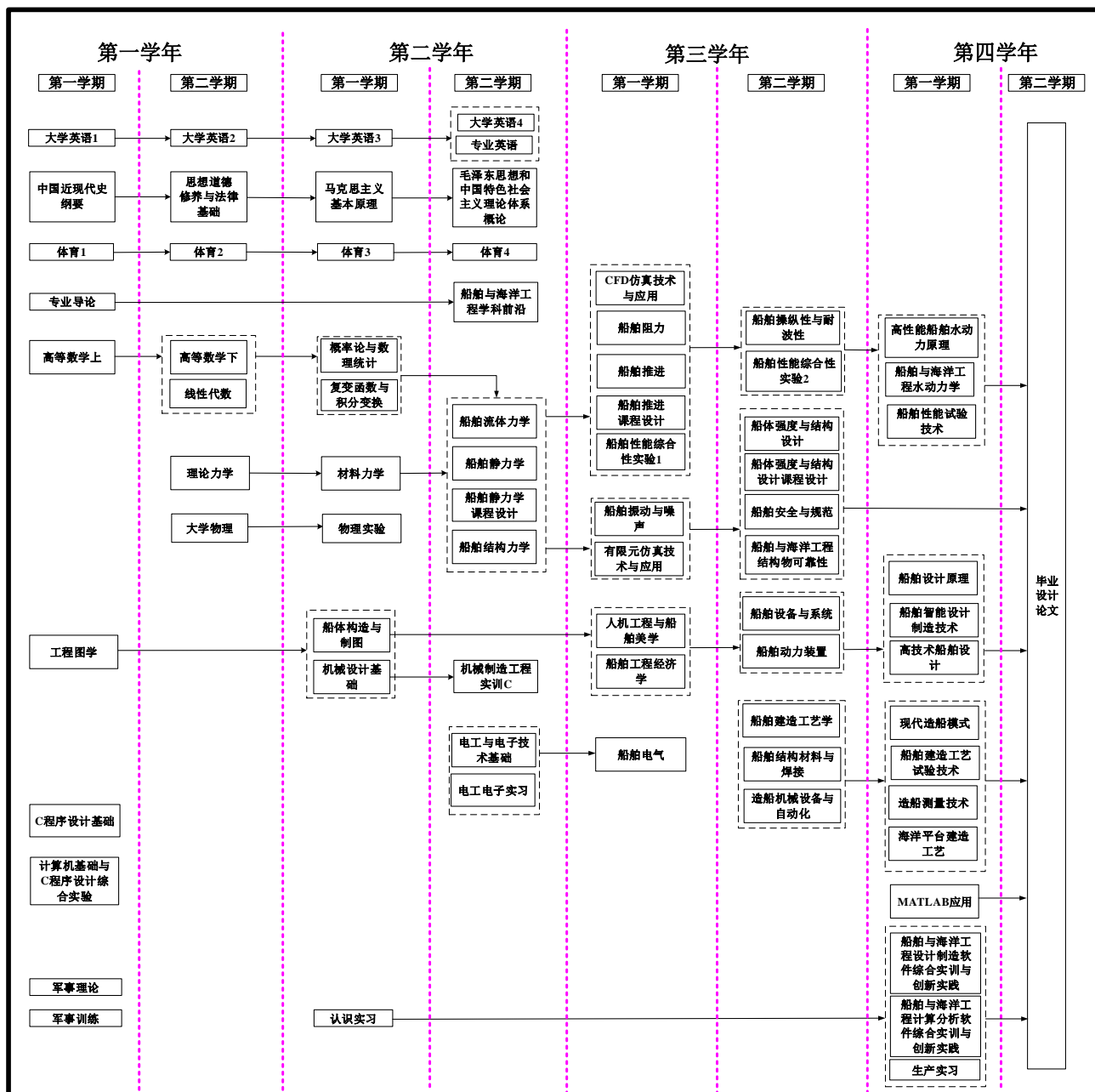
专业核心课程	专业特色课程	课程名称	船舶与海洋工程专业（卓越工程师班）毕业要求											
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		思想道德修养与法律基础			√			√		√	√			√
		中国近现代史纲要			√			√		√	√			√
		毛泽东思想和中国特色社会主义理论体系概论			√			√		√	√			√

专业 核心 课程	专业 特色 课程	课程名称	船舶与海洋工程专业（卓越工程师班）毕业要求												
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
		马克思主义基本原理			√			√		√	√				√
		军事理论								√	√				√
		体育 1~4							√						√
		大学英语 1~4										√			√
		C 程序设计基础			√		√								√
		计算机基础与 C 程序设计 综合实验			√		√								√
		专业导论		√			√	√							
		工程图学	√	√		√									
		高等数学上	√	√		√									
		高等数学下	√	√		√									
		线性代数	√	√		√									
		大学物理	√	√		√									
		物理实验	√	√											
		理论力学	√	√		√									
		概率论与数理统计	√	√		√									
		电工与电子技术基础	√	√											
		材料力学	√		√	√									
		机械设计基础	√		√										
√		船体构造与制图			√		√								
√		船舶流体力学	√			√									√
√		船舶结构力学	√			√									√
√		船舶静力学		√	√	√		√							
√		船舶阻力		√	√	√									
√		船舶推进		√	√	√									
√		船舶操纵性与耐波性		√	√	√									
√		船体强度与结构设计					√								
√		船舶建造工艺学			√			√			√				
√		船舶设计原理						√						√	√
	√	船舶振动与噪声		√		√									
	√	海洋平台建造工艺					√								
	√	人机工程与船舶美学						√	√						
	√	现代造船模式			√					√				√	
		军事训练								√	√				√
		认识实习	√			√									
		电工电子实习		√						√	√				
		机械制造工程实训		√						√	√				

专业 核心 课程	专业 特色 课程	课程名称	船舶与海洋工程专业（卓越工程师班）毕业要求												
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
		船舶静力学课程设计			√		√								
		船舶推进课程设计			√		√								
		船舶性能综合性实验 1 (阻力、推进)	√			√					√				
		船舶性能综合性实验 2 (操纵、耐波)	√			√					√				
		船体强度与结构设计课程设计			√		√								
		船舶与海洋工程设计制造软件综合实训与创新实践	√	√	√	√	√								
		船舶与海洋工程计算分析软件综合实训与创新实践	√	√	√	√	√								
		船舶与海洋工程专业生产实习			√		√	√				√	√	√	
		毕业设计	√	√	√	√	√	√	√	√	√	√	√	√	√

### 三、课程教学进程图

#### III Teaching Process Map







#### 四、 理论教学建议进程表

#### IV Theory Course Schedule

(一) 通识教育必修课程 General Education Required Courses									
课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including					建议 修读学期 Suggested Term	先修课程 Prerequisite Course
			总学时 Tot hrs.	实验 Exp.	上机 Ope- ratio n	实践 Prac- tice	课外 Extra- cur		
4220001111	思想道德修养与法律基础 MORALS, ETHICS AND FUNDAMENTALS OF LAW	3	48			8		2	
4220002111	中国近现代史纲要 Outline of Contemporary and Modern Chinese History	2	32					1	
4220003111	毛泽东思想和中国特色社会主义理论体系概论 INTRODUCTION TO MAO ZEDONG THOUGHT AND SOCIALISM WITH CHINESE CHARACTERISTICS	4	96			32		4	
4220005111	马克思主义基本原理 Marxism Philosophy	3	48			8		3	
1060003131	军事理论 Military Theory	1	32			16		1	
4210001171	体育1 Physical Education I	1	26					1	
4210002171	体育2 Physical Education II	1	34					2	
4210003171	体育3 Physical Education III	1	34					3	
4210004171	体育4 Physical Education IV	1	34					4	
4030002181	大学英语1 College English 1	3	60				12	1	
4030003181	大学英语2 College English II	2	44				12	2	大学英语1
4030004181	大学英语3 College English III	2	44				12	3	大学英语2
4030004181	大学英语4 College English IV	2	44				12	4	大学英语3
4120335171	C程序设计基础 Fundamentals of Computer Program Design(C)	2	32					1	
4120336171	计算机基础与C程序设计综合实验 FOUNDATION OF COMPUTER AND EXPERIMENTS OF COMPUTER PROGRAM DESIGN(C)	1	32	32				1	
小 计 Subtotal		29	640	32		64	48		
(二) 通识教育选修课程 General Education Elective Courses									
创新创业类 Innovation and Entrepreneurship Courses		要求至少取得9个学分，且必须选修艺术体育类课程中的艺术类相关课程并取得至少2个学分，在创新创业类课程中至少选修一门课程，在人文社科类或经济管理类课程中至少选修一门。							
人文社科类 Arts and Social Science Courses									
经济管理类 Economy and Management Courses									
科学技术类 Science and Technology Courses									

艺术体育类 Art and Physical Education Courses									
(三) 专业教育必修课程 Basic Disciplinary Required Courses									
4140342131	专业导论 Introduction to the Program	1	16					1	
4180269171	工程图学B Engineering Graphics	3.5	72			16		1	
4050063111	高等数学A上 Advanced Mathematics A1	5	80					1	
4050064111	高等数学A下 Advanced Mathematics A2	5	80					2	高等数学A上
4050229111	线性代数 Linear Algebra	2.5	40					2	高等数学A上
4140125111	理论力学A Theoretical Mechanics	4.5	72					2	
4050463131	大学物理B Physics	5	80					2	高等数学A上
4050224111	物理实验B Physics Lab.	1	32	32				3	大学物理B
4050058111	概率论与数理统计B Probability and Mathematical Statistics	3	48					3	高等数学A下
4140004111	材料力学C Materials Mechanics	4	64	4				3	理论力学A
4180031111	机械设计基础 Fundamentals of Mechanical Design	3.5	56	6				3	
4140577171	船体构造与制图 Ship Structure and Graphing	4	64			32		3	
4100012111	电工与电子技术基础C Fundamentals of Electrical Engineering & Electric Technology	4	64	10				4	大学物理B
4140578171	船舶流体力学 Ship Fluid Mechanics	4	64	8				4	
4140017111	船舶结构力学A Ship Structural Mechanics	4	64					4	
4140579171	船舶静力学A Ship Hydrostatics	2	32	2				4	
4140601171	船舶阻力E Ship Resistance	2	32					5	
4140602171	船舶推进B Ship Propulsion	2.5	40					5	
4140603171	船舶操纵性与耐波性B Ship Maneuverability and Seakeeping	2.5	40					6	
4140604171	船体强度与结构设计 Ship Strength and Structural Design	2.5	40	4				6	
4140605171	船舶建造工艺学G Ship Building Technology	2.5	40	4				6	
4140606171	船舶设计原理F Principles of Ship Design	2.5	40					7	
小计 Subtotal		70.5	1160	70	0	32	16		
(四) 专业教育选修课程 Specialized Elective Courses									
4050053111	复变函数与积分变换C Complex Function & Integral Transformation	2	32					3	

4140481141	专业英语 Specialized English	2	32					4	
4140586171	船舶振动与噪声 Ship Vibration and Noise	2	32	4				5	
4140588171	CFD仿真技术与应用 CFD Simulation Technology and Its Application	2	32		16			5	
4140589171	有限元仿真技术与应用 FEA Simulation Technology and Its Application	2	32		16			5	
4150215131	船舶电气 Ship Electrical Equipment	2	32					5	
4140441131	人机工程与船舶美学 Ergonomics and Ship Aesthetics	2	32					5	
4140442131	船舶工程经济学 Ship Engineering Economics	2	32					5	
4140587171	船舶结构材料与焊接 Ship Structural Material and Welding	2	32					6	
4140590171	船舶安全与规范 Ship Safety and Regulations	2	32					6	
4150014111	船舶动力装置 Ship Power Equipment	2	32					6	
4140567151	船舶与海洋工程结构物可靠性 Reliability of Marine Structures	2	32					6	
4140408131	造船机械设备与自动化 Shipbuilding Equipment and Automation	2	32	2				6	
4140022111	船舶设备与系统 Ship Equipment and Systems	2	32					6	
4140443131	Matlab应用 MATLAB Application	2	32					7	
4140591171	海洋平台建造工艺 Offshore Platform Construction Technology	2	32					7	
4140593171	高性能船舶水动力原理 Hydrodynamic Principle of High Performance Ship	2	32					7	
4140592171	船舶与海洋工程水动力学C Hydrodynamics of Naval Architecture and Ocean Engineering	2	32	8				7	
4140026111	船舶性能试验技术 Experimental Technology of Ship Performance	2	32					7	
4140156111	造船测量技术 Shipbuilding Measurement Technology	2	32	2				7	
4140595171	船舶建造工艺试验技术 Experimental Technology of Shipbuilding	2	32	16				7	
4140596171	船舶智能设计制造技术 Intelligent Technology of Ship Design and Manufacture	3	48					7	
4140148111	现代造船模式A Modern Ship Manufacturing Mode	2	32					7	
4140597171	高技术船舶设计 Design of High-tech Ship	2	32					7	
小 计 Subtotal		49	784	32	32				

修读说明：要求从上述课程中至少选修20学分，其中必须包括船舶动力装置、船舶电气和船舶振动与噪声。 NOTE: Students are required to obtain at least 12 credits, wherein, Ship power equipment, Ship electrical equipment and Ship Vibration and Noise are required courses.								
(五) 个性课程 Personalized Elective Courses								
4140029111	船舶与海洋工程学科前沿 Frontier of Naval Architecture and Ocean Engineering	1	16				4	
修读说明：学生从以上个性课程和学校发布的其它个性课程目录中选课，要求至少选修6学分。 NOTE: Students can select courses from above and the other personalized courses in catalog, and are required to obtain at least 6 credits.								

## 五、集中性实践教学环节

### V Practice Schedule

课程编号 Course Number	实践环节名称 Practice Courses Name	学分 Credits	周数 Weeks	建议修读学期 Suggested Term
1060002111	军事训练 Military Training	1.5	3	1
4140340121	认识实习 Practice of Understanding	1	1	3 (企业)
4100069111	电工电子实习B Practice of Electrical Engineering & Electronics	1	1	4
4180114111	机械制造工程实训C Practice of Mechanical Manufacturing Engineering	2	2	4
4140183111	船舶静力学课程设计 Course Exercise of Ship Hydrostatics	1	1	4
4140539151	船舶推进课程设计 Course Exercise of Ship Propulsion	1	1	5
4140609171	船舶性能综合性实验 1 (阻力、推进) Comprehensive Experiments of Ship Performance I (Ship Resistance and Ship Propulsion)	0.5	0.5	5 (分散)
4140610171	船舶性能综合性实验 2 (操纵、耐波) Comprehensive Experiments of Ship Performance II (Ship Maneuverability and Seakeeping)	0.5	0.5	6 (分散)
4140191111	船体强度与结构设计课程设计 Course Exercise of Ship Strength and Structural Design	1	1	6
4140607171	船舶与海洋工程设计制造软件综合实训与创新实践 Comprehensive Training on Design and Manufacture Software of Naval Architecture and Ocean Engineering and Innovation Practice	3	3	7 (分散)
4140608171	船舶与海洋工程计算分析软件综合实训与创新实践 Comprehensive Training on Calculation Software of Naval Architecture and Ocean Engineering and Innovation Practice	2	2	7 (分散)
4140660171	船舶与海洋工程专业生产实习 Practice of Production	2	2	7 (企业)
4140661171	毕业设计 Graduation Design	9	17	8 (企业)

小 计 Subtotal	25.5	35	
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## 六、其它要求

### VI Recommendations on Course Studies

通识教育选修课中要求选修《中国造船史》。《形势与政策》和《心理健康教育》课程为课外必修课程，分别计 2 个和 1 个课外学分。

The course of China's Shipbuilding History is one of required courses in the general education elective courses. The course of Situation and Policy, and the course of Mental Health Education are extracurricular compulsory courses, with 2 and 1 extracurricular credit respectively.

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专业培养方案责任人：贺 伟