武汉理工大学能源与动力工程学院

School of Energy & Power Engineering of
Wuhan University of Technology

本科专业培养方案

Undergraduate Program

（Grade 2013）

武汉理工大学教务处

Academic Affairs Office of Wuhan University of Technology

目　录

能源与动力工程（船舶）专业本科培养方案
Undergraduate Program for Specialty in Energy & Power Engineering

一、业务培养目标

Ⅰ Educational Objectives

本专业培养具备能源动力系统和自动化方面基础知识，适应社会发展和行业需求，能在国民经济相关部门从事热能及动力工程的设计、制造、使用、管理和研究与开发等方面工作的，具有“适应能力强、实干精神强、创新意识强”的高级工程技术人才。

To cultivate advanced technical talents who have all round development in morality, intelligence and physique, possess the creative spirit and practical ability, adapt the need of socialist market economy, have the basic knowledge of Energy & Power System and Automation Engineering, can be engaged in the work including design of power machine and power engineering, manufacture, use, manage, R&D and so on in varies national economic department.

二、业务培养要求

Ⅱ Educational Requirement

本专业学生主要学习动力工程及工程热物理的基础理论知识，学习各种能量转换及有效利用的理论和技术，接受现代动力工程师的基本训练；具有进行动力机械与热工设备设计、运行、实验研究的基本能力。

毕业生应获得以下几方面的知识和能力：

1. 具有较扎实的自然科学基础知识；

2. 较系统地掌握本专业的技术理论知识，主要包括工程力学、机械设计基础、流体力学、工程热力学、传热学、电工与电子技术、控制理论等基础知识；

3. 获得本专业相关的工程实践训练；

4. 具有较强的计算机和外语应用能力；

5. 具有能源动力系统与自动化所必要的专业知识，了解该学科的前沿知识及其发展趋势；

6. 具有较强的自学能力，创新意识和较高的综合素质。

The students mainly study the foundation theories and basic knowledge of power engineering and engineering thermal physics, accept the basic training of power engineer. The undergraduate students would grasp the knowledge and ability illustrated as follows:

1. Grasp necessary basic knowledge and skills on natural science and engineering.

2. Systematically grasp necessary basic knowledge and skills on the specialty, mainly including engineering dynamics, the foundation of the machinery design, engineering thermal physics, hydromechanics, electrics and electronics, control theory and management.

3. Get practical training of the specialty.

4. Having good application ability of computer and foreign language.

5. Have specialty knowledge of the thermal and power engineering, and grasp the development of the specialty.

6. Have good self-study ability, creative consciousness and good synthesis nature.

三、主干学科

Ⅲ Major Disciplines

主干学科：船舶与海洋工程，动力工程与工程热物理，机械工程

Major Disciplines: Naval Architecture and Ocean Engineering, Power Engineering and Engineering Thermal Physics, Machine Engineering

四、专业核心课程与专业特色课程

Ⅳ Core Courses and Characteristic Courses

专业核心课程：工程热力学、传热学、内燃机学、动力机械测试技术、船舶动力装置原理、动力系统自动化

Core Courses: Engineering Thermodynamics, Heat Transfer, Internal-combustion Engine Theory, Measuring Methodology of Power Machine, Principle & Design of Marine Power Plant, Automation of Power System.

专业特色课程：内燃机排放及后处理、船舶辅机、船舶机械制造工艺学

Characteristic Courses: Internal-combustion Engine Emissions and After-treatment Technology, Marine Auxiliary Machine, Marine Machinery Manufacture Technology.

五、计划学制与学位

Ⅴ Length of School and Degree

修业年限：四年

Duration： Four Years

授予学位：工学学士

Degree Granted: Bachelor of Engineer

六、最低毕业学分规定

Ⅵ Graduation Credit Criteria

课程类别 / 课程性质	通识课程 Public Basic Courses	学科大类课程 Basic Disciplinary Courses	专业课程 Specialized Courses	个性课程 Personalized Course	集中性实践 Practice Courses	课外学分 Study Credit after Class	总学分 Total Credits
必修课 Required Courses	35	37	42.5	\	30.5		190
选修课 Elective Courses	9	6	10	10	\	10	

七、课程修读指导建议

Ⅶ Recommendations on Course Studies

1、辅修第二专业毕业设计为 6 个学分，辅修第二专业必须修满 50 学分以上。

You will receive 6 credits after you finish the graduation design of the associate's degree and you have to get more than 50 credits for your graduation.

2、修读第二学位的学生请注意所选课程开设的学期和修读顺序，以便合理学习。

In order to make reasonable arrangements, the students with an associate's degree should pay attention to the course schedule, such as the time and order of the courses you choose.

八、理论教学建议进程表

Ⅷ Theory Course Schedule

课程类别 Course Classification	课程性质 Course Nature	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	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extracur			
通识课程 Public Basic Courses	必修课 Required Courses	4220002111	中国近现代史纲要 Outline of Chinese Contemporary and Modern History	2	32					1-6		
		4220001111	思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	3	48			8		1-6		
		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		1-6		
		4220005111	马克思主义基本原理 Marxism Philosophy	3	48			8		1-6		
		4030002111	大学英语 A1 College English A1	3	64				16	1		
		4030003111	大学英语 A2 College English A2	3	64				16	2	4030002111	
		4030004111	大学英语 A3 College English A3	3	64				16	3	4030002111	
		4030005111	大学英语 A4 College English A4	3	64				16	4	4030002111	
		4210001111	体育 1 Physical Education1	1	32					1		
		4210002111	体育 2 Physical Education2	1	32					2	4210001111	
		4210003111	体育 3 Physical Education3	1	32					3	4210001111	
		4210004111	体育 4 Physical Education4	1	32					4	4210001111	
		1060001111	军事理论 Military Theory	1	32			16		2		
		1050001131	心理健康教育 Mental Health Education	1	16					1		1050 00113
		4120017110	大学计算机基础 Foundation of Computer	2	32		12			1		
		4120023110	计算机程序设计基础(C 语言) Fundamentals of Computer Program Design(C Language)	3	48		12			3		
		小 计 Subtotal		35	736		24	64	64			
	选修课 Elective Courses	创新创业类 Innovation and Entrepreneurship Courses										
		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										

全校学生要求至少取得 9 学分，建议在每个类别中分别至少选修一门课程。

All students are required to obtain at least nine credits, and suggested to select at least one course in five categories respectively.

课程类别 Course Classification	课程性质 Course Nature	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	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extracur			
学科大类课程 Basic Disciplinary Courses	必修课 Required Courses	4150105111	专业导论 Introduction to Specialty	1	16					1		
		4050063110	高等数学 A1 Advanced Mathematics AⅠ	5	80					1		
		4050064110	高等数学 A2 Advanced Mathematics AⅡ	5	80					2	4050063110	
		4180015111	工程图学 A1 Engineering Graphics AⅠ	3.5	56					1		
		4180016111	工程图学 A2 Engineering Graphics AⅡ	2.5	40					2	4180015111	
		4050229110	线性代数 Linear Algebra	2.5	40					2		
		4050024111	大学物理 C Physics C	4.5	72					2		
		4050224111	物理实验 B Physics Lab. B	1	32	32				3		
		4080062110	机械原理 Mechanism and Machine Theory	3.5	56	4				4		
		4100011111	电工与电子技术基础 B Electrical Engineering B	5.5	88	20				4		
		4050058111	概率论与数理统计 B Probability and Mathematical Statistics B	3	48					4		
		小 计 Subtotal		37	608	56						
	选修课 Elective Courses	4150184131	能源概论 Introduction to Energy	2	32					4		*
		4150084111	优化技术基础 Foundational of Optimum Technology	2	32					4		
		4150052111	海洋工程装备概论 Introduction to Marine Engineering Equipment	2	32					4		
		4150046111	工程常用计算分析软件基础 The Basic of Common Calculating and Analyzing Software in Engineering	2	32					5		*
		4150168121	流体计算软件应用基础 Fundamental of computational fluid dynamics software	2	32		8			5		
		4150132121	混合动力导论 Introduction to Hybrid Power	2	32					7		
		4150031111	船舶污染控制 Ship Pollution Control	2	32					7		
		小 计 Subtotal		14	224							4
		修读说明：要求至少选修 6 学分。 NOTE: Minimum subtotal credits: 6.										

课程类别 Course Classification	课程性质 Course Nature	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	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur			
专业课程 Specialized Courses	必修课 Required Courses	4070072111	工程材料 Engineering Materials	2.5	40	4				2		*
		4140077111	工程力学 B Engineering Mechanics B	4	64					3		
		4140078111	工程力学 B 实验 Mechanics Experiments B	0.5	16	16				3		
		4180023111	互换性与测量技术 B Interchange Ability & Measurement B	2	32	4				3		
		4180045111	金属工艺学 B Metal Technology B	2.5	40	4				4		
		4140129111	流体力学 D Fluid Mechanics D	2	32	6				4		*
		4080030111	机械设计 Mechanical Design	4	64	6				5		
		4150049111	工程热力学 A Engineering Thermodynamics A	3.5	56	4				5		*
		4150005111	传热学 Heat Transfer	3	48	4				5		*
		4150205131	自控原理与应用 Principle and Application of Auto-control	3	48	4				5		
		4150038111	动力机械测试技术 A Measuring Methodology of Power	3	48	14				5		*
		4150041111	动力系统自动化 Automation of Power System	2	32	4				6		*
		4150202131	内燃机学 Internal Combustion Engine Theory	4.5	72	8				6		*
		4150018111	船舶动力装置原理 A Principle & Design of Marine Power Plant A	3	48	2		4		6		*
		4150026111	船舶机械制造工艺学 Marine Machinery Manufacture Technology	3	48	4				6		*
		小 计 Subtotal		42.5	688	84		4				27
	选修课 Elective Courses	船机修造模块 Maritime Mechanical Manufacturing Section										
		4150079111	无损检测技术 B Non-destructive Testing Technique B	2	32	8				4		
		4150039111	动力机械工况监测与故障诊断 Power Machine Condition Monitoring & Fault Diagnoses	2	32	4				5		
		4150035111	船机检验 Marine Equipment Survey	2	32	4				6		
		4150016111	船舶机械关键部件设计方法基础 Design Methods of Maritime Mechanical Key Components	2	32	2				6		
		4150184131	船机专业英语 English of Maritime Mechanical	2	32					6		
		4150023111	船舶管系与工艺设计 Install Technology of Ship Piping System	3	48					6		

课程类别 Course Classifi-cation	课程性质 Course Nature	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	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Ope-ration	实践 Prac-tice	课外 Extra-cur			
		4150015111	船舶动力装置安装工艺学 Marine Power Plant Installation Technology	3	48	2				7		
		4150025111	船舶机械修理工艺学 Marine Machinery Repair Technology	4	64	4				7		
		小 计 Subtotal		20	320	24						
		动力机械模块 Power Machinery Section										
		4150185131	动力机械工程微机应用技术 Computer Application Technology in Power Machinery and Engineering	2	32	4				5		
		4150140121	内燃机专业英语 English of Internal-combustion Engine	2	32					6		
		4150156121	内燃机燃烧学 Combustion Theory of IC Engine	2	32					7		
		4150186131	内燃机监测诊断技术 Monitoring and Diagnosis Technology on IC Engine	2	32	2				6		
		4150137121	内燃机仿真计算 Simulation of Internal-combustion Engine	2	32			10		7		
		4150133121	内燃机电子控制技术 The Electronic Control on IC Engine	2	32	4				7		
		4150134121	内燃机排放及后处理 Internal-combustion Engine Emissions and After-treatment Technology	2	32	2				7		
		4150124111	内燃机匹配与优化 Internal-combustion Engine	2	32					7		
		4150187131	气体发动机 Gas engine	2	32	2				7		
		4150188131	内燃机增压技术 Internal combustion engine supercharging technology	2	32	2				6		
		小 计 Subtotal		20	320	16		10				
		动力装置模块 Powertrain System Section										
		4150036111	船机桨工况配合及特种推进器 Matching Among Vessel-engine-propeller	2	32	4				6		
		4150023111	船舶管系与工艺设计 Install Technology of Ship Piping System	3	48					6		
		4150189131	船舶动力装置专业英语 English of Marine Power Plant	2	32					6		
		4150034111	船舶制冷与空调技术 Marine Refrigerating and Air-conditioning	2	32	4				7		
		4150042111	动力装置三维设计方法及软件 Three-dimensional Design Method and	3	48					7		
		4150017111	船舶动力装置检验 Marine Power Plant Inspection	2	32	4				7		
		4150030111	船舶推进轴系振动与校中 Ship Propulsion Shafting Vibration and Alignment	2	32					7		

课程类别 Course Classifi-cation	课程性质 Course Nature	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	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Ope-ration	实践 Prac-tice	课外 Extra-cur			
		4150190131	蒸汽动力装置 Steam Power Plant	2	32	4				7		
		4150191131	燃烧学导论 An Introduction to Combustion	2	32	2				7		
		小 计 Subtotal		20	320	18						
		修读说明：选择一个模块，在该模块中至少选修 10 学分。 Study shows : Select anyone module, Subtotal credits at least 10.										
个性课程 Personalized Course	选修课 Elective Courses	4140114111	交通运输工程概论 B Panorama of Transportation Equipment B	1.5	24					3		
		4150166121	船舶企业信息化 ShipbuildingEnterprises Informationization	2	32					3		
		4150192131	船用清洁能源技术 Clean Energy Technology Used in Ship	2	32					4		
		4150021111	船舶辅机 B Marine Auxiliary Machine B	2	32	4				5		
		4140033111	船舶原理 C Theoretical Naval Architecture C	2	32					5		
		4150081111	信号分析与处理 Signal Analysis and Disposal	2	32					5		
		4150096111	汽车概论 A Structure of Automobile A	2.5	40					6		
		4150054111	机械振动分析与应用 Mechanical Vibration Analysis	2	32	2				6		*
		4150010111	船舶电气设备及电站 Ship Electric Equipment and Power Station	2	32	4				7		*
		4150008111	船舶电力推进技术 Ship Electric Propulsion Technology	2	32	4				7		
		小 计 Subtotal		20	320	14						6.5
		修读说明：学生可跨专业自主选择修读全校其他专业的课程，建议修读以上课程。要求至少选修 10 学分。 NOTE：Students can choose any courses from the other specialties, and are especially suggested to choose the courses above. Minimum subtotal credits: 10.										

九、集中性实践教学环节建议进程表

Ⅸ Practice Schedule

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crs	建议修读学期 Suggested Term	第二专业 Second Major
1060002111	军事训练 Military Training	3	1.5	1	
4180113111	机械制造工程实训 B Machinery Manufacturing Engineering Practice B	4	4	3	
4180109111	机械设计基础课程设计 Course Design of Mechanical Design	2	2	5	
4100069111	电工电子实习 B Practice in Electrical Engineering & Electronics B	1	1	5	
4150193131	热力学和传热学课程设计 Course Design on Thermodynamics and Heat Transfer	1	1	5	

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crs	建议修读学期 Suggested Term	第二专业 Second Major
4150200131	柴油机结构认知与实操 The Structure Cognition and Operation for Diesel Engine.	3	3	6	
4150109111	能源动力系统课程设计 Course Design of Energy & Power System	3	3	6	
4150110111	生产实习 Specialty Practice	3	3	7	
4150112111	实验能力综合训练（分散进行） Experiment Ability Combined Training	1	1	8	
4150142121	毕业设计（论文） Practice and Design for Graduation	17	11	8	6*
小　　计　Subtotal		38	30.5		10

十、其它要求

Ⅹ Other Demands

《形势与政策》课程，平均每学期 16 学时，一般按专题进行，在第七学期末考核，计 2 个课外学分，具体由学校学生发展指导中心负责组织落实。

Situation & Policy, a 16 hours/term with 2 credits course, is taught according to topics and tested at the end of the 7th term . The course will be arranged by the University Students' Affairs' Department in each school.S

油气储运工程专业本科培养方案
Undergraduate Program for Specialty in Oil and Gas Storage and Transportation Engineering

一、业务培养目标

Ⅰ Educational Objectives

本专业培养具备工程流体力学、工程热力学及传热学、油气储运等方面知识，能在国家与省、市的发展规划部门、交通运输规划与设计部门、油气储运管理部门（行业）及国防部门等从事油气储运工程的规划、勘查设计、施工项目、设备与设施管理和研究、建设和生产运行管理等工作的高级工程技术人才。

The target of education is to train students to be high-class engineering technologists who possess the knowledge of Engineering Fluid Mechanics，engineering thermodynamics & heat transfer，Oil & gas storage and transportation Engineering etc. and be able to work on planning, surveying, designing, constructing, in the project, and management & studying of equipment, management of construction & production, in the development planning section, planning & design section of traffic & transportation, Management section / industry of Oil & gas storage and transportation, and Defense department etc.

二、业务培养要求

Ⅱ Educational Requirement

主要学习油气储运工艺、设备与设施方面的基本理论和基本知识，接受识图制图、工程测量、工程概预算的基本训练，具有进行油气储运系统的规划、设计与运行管理的基本能力。

毕业生应获得以下几个方面的知识与能力：

1. 掌握电学、工程力学、工程流体力学、工程热力学及传热学的基础理论、基本知识；
2. 具有油气储运系统的规划、设计与运行管理的能力；
3. 掌握油气质量检测、油气储运设备的防腐与安全保障技术；
4. 熟悉国家关于油气储运行业的方针、政策和法规；
5. 了解油气储运工程的理论前沿和发展动态；
6. 具有计算机和先进技术应用与设备管理的能力；
7. 掌握文献检索、资料查询的基本方法，具有初步的科学研究实际工作能力。

The basic theory and knowledge of techniques, equipment and establishment, for oil & gas storage and transportation, are mainly studied on. And the basic trainings, containing drawing, operating in the computer, engineering measuring, engineering budget estimating, are acquired. And the basic abilities to planning, designing and operation administrating the oil & gas storage and transportation system, are got.

The graduate should get the following knowledge and abilities.

1. Master the fundamental theories and basic knowledge of electrics, engineering mechanics, engineering fluid mechanics, engineering thermodynamics and heat transfer.
2. Have the ability of planning, design and management of oil & gas storage and transportation system.
3. Master oil & gas quality testing technology, oil & gas equipments maintenance and safeguard technology.
4. Acquaint with the national guideline, policy and laws concerning oil & gas industry.
5. Know the theory foreland of oil & gas storage and transportation and its developments and trends.
6. Have the ability of using computer & advanced techniques and managing the equipment.
7. Master the ability of information retrieval and data query, and have the primary scientific research ability.

三、主干学科

Ⅲ Major Disciplines

主干学科：石油工程、交通运输工程、船舶与海洋工程

Major Disciplines: Petroleum engineering, Traffic and transportation engineering, Naval architecture and ocean engineering

四、专业核心课程与专业特色课程

Ⅳ Core Courses and Characteristic Courses

专业核心课程：工程力学、工程流体力学、工程热力学及传热学、泵和压缩机、电工与电子技术基础、油气管道设计与管理、油气集输、油库设计与管理、油气储运工程最优化、油气储运工程经济与法规、燃气输配工程、油气运输船舶、油气储运安全系统工程、油气储运系统控制及自动化、油气储运设施腐蚀与防腐、海洋石油工程设计

专业特色课程：燃气输配工程、油气储运设施腐蚀与防腐、油气储运安全系统工程、油气运输船舶、海洋石油工程设计

Core Courses: Engineering Mechanics, Engineering Fluid Mechanics, Engineering thermodynamics and heat transfer, Pumps and Compressors, Fundamentals of Electrical Engineering & Electric Technology, Design and Management of Oil & Gas Pipelines, Oil & Gas Gathering and Transportation, Oil Depot Design and Management, Oil & Gas Storage and transportation Engineering Optimization, Economics and Law of Oil & Gas Storage and Transportation Engineering, Fuel Gas Transportation and Distribution Engineering, Oil & Gas Transport Tanker, Oil & Gas Storage and Transportation Safety System Engineering, Control and Automatization of Oil & Gas Storage and Transportation System, Corrosion and Protection of Oil & Gas Storage and Transportation Facilities, Offshore Oil Engineering Design, etc.

Characteristic Courses: Fuel Gas Transportation and Distribution Engineering, Corrosion and Protection of Oil & Gas Storage and Transportation Facilities, Oil & Gas Storage and Transportation Safety System Engineering, Oil & Gas Transport Tanker, Offshore Oil Engineering Design.

五、计划学制与学位

Ⅴ Length of School and Degree

修业年限：四年

Duration： Four Years

授予学位：工学学士

Degree Granted: Bachelor of Engineer

六、最低毕业学分规定

Ⅵ Graduation Credit Criteria

课程类别 / 课程性质	通识课程 Public Basic Courses	学科大类课程 Basic Disciplinary Courses	专业课程 Specialized Courses	个性课程 Personalized Course	集中性实践 Practice Courses	课外学分 Study Credit after Class	总学分 Total Credits
必修课 Required Courses	35	47.5	38	\	28.5	\	190
选修课 Elective Courses	9	4	8	10	\	10	

七、课程修读指导建议

Ⅶ Recommendations on Course Studies

1、在进行油气管道设计与管理、油气集输、油库设计与管理、油气储运工程最优化、燃气输配工程、油气运输船舶等课程学习前，应先修工程流体力学、工程热力学及传热学、泵和压缩机；

2、双学位者必须修满 50 学分以上。

1. Fluid Mechanics, Engineering Thermodynamics and Heat Transfer, Pumps and Compressors should firstly be studied, then Design and Management of Oil & Gas Pipelines, Oil & Gas Gathering and Transportation, Oil Depot Design and Management, Oil & Gas Storage and transportation Engineering Optimization, Fuel Gas Transportation and Distribution Engineering, Oil & Gas Transport Tanker etc. are studied.

2. The Dual-degree students need to obtain more than 50 credits.

八、理论教学建议进程表

Ⅷ Theory Course Schedule

课程类别 Course Classification	课程性质 Course Nature	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	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur			
通识课程 Public Basic Courses	必修课 Required Courses	4220001111	思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	3	48			8		1-6		
		4220005111	马克思主义基本原理 Marxism Philosophy	3	48			8		1-6		
		4220002111	中国近现代史纲要 Outline of Chinese Contemporary and Modern History	2	32					1-6		
		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		1-6		
		1060003111	军事理论 Military Theory	1	32			16		1		
		1050001131	心理健康教育 Mental Health Education	1	16					1		
		4210001110	体育 1 Physical Education Ⅰ	1	32					1		
		4210002110	体育 2 Physical Education Ⅱ	1	32					2	体育 1	
		4210003110	体育 3 Physical Education Ⅲ	1	32					3	体育 2	
		4210004110	体育 4 Physical Education Ⅳ	1	32					4	体育 3	
		4030002110	大学英语 A1 College English A 1	3	64				16	1		
		4030003110	大学英语 A2 College English A Ⅱ	3	64				16	2	大学英语 A1	
		4030004110	大学英语 A3 College English A Ⅲ	3	64				16	3	大学英语 A2	
		4030005110	大学英语 A4 College English A Ⅳ	3	64				16	4	大学英语 A3	
		4120017111	大学计算机基础 Foundation of Computer	2	32		12			1		
		程序设计语言课程组(3 学分，二选一)										
		4120023111	计算机程序设计基础（C 语言） Fundamentals of Computer Program Design (C Language)	3	48		12			2	大学计算机基础	

课程类别 Course Classification	课程性质 Course Nature	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	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extracur			
		4120025110	计算机程序设计基础(VB 语言) Fundamentals of Computer Program Design (VB Language)	3	48		12			2	大学计算机基础	
		小　　计　Subtotal		35	720	0	24	64	64			
	选修课 Elective Courses	创新创业类 Innovation and Entrepreneurship Courses		全校学生要求至少取得 9 学分，建议在每个类别中分别至少选修一门课程。 All students are required to obtain at least nine credits, and suggested to select at least one course in five categories respectively.								
		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										
学科大类课程 Basic Disciplinary Courses	必修课 Required Courses	4150094111	专业导论 Introduction to Speciality	1	16					1		
		4050144111	普通化学 General Chemistry	3	48	18				1		
		4050063111	高等数学 A1 Advanced Mathematics AⅠ	5	80					1		
		4050064111	高等数学 A2 Advanced Mathematics AⅡ	5	80					2	高等数学 A1	
		4050229111	线性代数 Linear Algebra	2.5	40					2		
		4180017111	工程图学 B Engineering Graphics B	4	64		4			2		
		4050021111	大学物理 A1 Physics AⅠ	3.5	56					2		
		4050022112	大学物理 A2 Physics AⅡ	3.5	56					3	大学物理 A1	
		4050222111	物理实验 A1 Physics Lab. AⅠ	1	32	32				3	大学物理 A1	
		4050223111	物理实验 A2 Physics Lab. AⅡ	1	32	32				4	大学物理 A2	
		4070072111	工程材料 Engineering Materials	2.5	40	4				3		
		4180045111	金属工艺学 B Metal Technology B	2.5	40	4				3	工程材料 机械制造工程实训 B	
		4100011111	电工与电子技术基础 B Fundamentals of Electrical Engineering & Electric Technology B	5.5	88	20				4		
		4050058111	概率论与数理统计 B Probability and Mathematics Statistic B	3.0	48					4		
		4150050111	工程热力学与传热学 A Thermodynamics for Engineering and Heat	4.5	72	12				5		
		小　　计　Subtotal		47.5	792	122	4	0	0			

课程类别 Course Classification	课程性质 Course Nature	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	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extracur			
	选修课 Elective Courses	4140114111	交通运输工程概论 B Communications and Transportation Equipment introduction B	1.5	24					2		
		4150089111	油气储运工程经济与法规 Economics and Law of Oil & Gas Storage and Transportation Engineering	2	32					2		
		4150074111	石油天然气市场营销学 Oil and Natural Gas Marketing	2	32					3		
		4150083111	液压技术 Hydraulic Technology	2	32					4		
		4150091111	油气储运工程最优化 Oil & Gas Storage and Transportation Optimization Engineering	2	32		4			4	线性代数	*
		4150047111	工程概预算 A Budget Estimate of Engineering A	2	32					4		*
		小 计 Subtotal		11.5	184		4					
		修读说明：要求至少选修 4 学分 NOTE: Minimum subtotal class credits:4										
专业课程 Specialized	必修课 Required Courses	4140077111	工程力学 B Engineering Mechanics B	4	64					3		
		4140078111	工程力学 B 实验 Mechanics Experiments B	0.5	16	16				3		
		4140128111	流体力学 A Fluid Mechanics A	4	64	6				4		*
		4180031111	机械设计基础 Base of Mechanical Design	3.5	56	6				4		
		4150003111	测试技术 A Testing Technology A	3	48	4				5		*
		4150004111	储运油料学 Storage and Transportation of Oil Material	2	32	4				5	普通化学	*
		4150075111	输油管道设计与管理 Design and Management of Oil Pipelines	2.5	40	4	2			5	流体力学 A	*
		4150002111	泵和压缩机 Pumps and Compressors	2.5	40	4				5		*
		4150085111	油罐及管道强度设计 Strength Design of Tank and Pipeline	2	32					6	工程力学 B	*
		4150086111	油库设计与管理 Oil Depot Design and Management	3	48	4				6		*
		4150072111	燃气输配工程 Fuel Gas Transportation and Distribution Engineering	4	64	6	2			6	流体力学 A	*
		4150087111	油气储运安全系统工程 Oil & Gas Storage and Transportation Safety System Engineering	2	32					6		*
		4150160121	油气储运设施腐蚀与防腐 Corrosion and Anti-corrosion of Oil & Gas Storage and Transportation Facilities	2	32	4				7		*
		4150204131	油气集输 A Oil and Gas Gathering and Transportation	3	48	4				7	流体力学 A	*
		小 计 Subtotal		38	616	62	4					

课程类别 Course Classification	课程性质 Course Nature	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	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extracur			
	选修课 Elective Courses	4150076111	水上油运管理 Oil and Natural Gas Shipping Management	2	32					5		
		4150088111	油气储运工程基础 Basic of Oil & Gas Storage and Transportation	1.5	24					5		
		4140064111	工程测量 C Engineering Survey C	2	32	8				5		*
		4150039111	动力机械工况监测与故障诊断 Condition Monitoring and Fault Diagnosis of Power Machine	2	32	4				6		
		4150194131	燃气轮机与燃气蒸汽联合装置 Gas turbines and gas - steam combined unit	2	32					6		
		4150045111	防污染技术 Antipollution Technology	2	32					7		*
		4150078111	天然气集输工程 Natural Gas Gathering Engineering	2	32					7		
		4150079111	无损检测技术 B Non-destructive Testing Technique B	2	32	8				7		
		4150161121	油气储运测量仪表与应用 Applied Measurement Equipments for Oil & Gas Storage and Transportation	2	32					7		
		小 计 Subtotal		17.5	280	20						
		修读说明：要求至少选修 8 学分 NOTE: Minimum subtotal class credits:8										
个性课程 Personalized Course	选修课 Elective Courses	4150093111	油气运输船舶 Oil & Gas Transport Tanker	2	32					5		*
		4150012111	油气储运设备 Oil & Gas Storage and Transportation Equipment	2	32					5	泵和压缩机	*
		4150090111	油气储运工程施工 Construction of Oil & Gas Storage and Transportation Engineering	2	32					6	工程测量 C	*
		4180048111	油气储运系统控制及自动化 Control and Automatization of Oil & Gas Storage and Transportation System	2.5	40	4				6		
		4150195131	液化天然气技术 Liquefied natural gas (LNG) technology	2	32					6		
		4150162121	海洋石油工程设计 Offshore Oil Engineering Design	2	32					7	工程力学 B	*
		4150163121	燃气计量 Measurement of Gas	2	32					7	燃气输配工程	
		小 计 Subtotal		14.5	232	4						
		修读说明：学生可跨专业自主选择修读全校其他专业的课程，建议修读以上课程。要求至少选修 10 学分。 NOTE：Students can choose any courses from the other specialties, and are especially suggested to choose the courses above. Minimum subtotal credits: 10.										

九、集中性实践教学环节建议进程表

Ⅸ Practice Schedule

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crs	建议修读学期 Suggested Term	第二专业 Second Major
1060002111	军事训练 Military Training	3	1.5	1	
4180113111	机械制造工程实训 B Machinery Manufacturing Engineering Practice B	4	4	3	
4180109111	机械设计基础课程设计 Mechanism Design	2	2	4	
4100069111	电工电子实习 B Practice in Electrical Engineering & Electronics B	1	1	5	
4150118111	输油管道设计与管理课程设计 Design and Management of Oil Transmission Pipelines	2	2	5	*
4150114111	油库设计与管理课程设计 Design and Management of Oil Bank	2	2	6	*
4150115111	油气集输课程设计 Oil and Gas Gathering and Transportation	2	2	7	*
4150111111	生产实习 Specialty Practice	3	3	7	
4150143121	毕业设计（论文） Design for Graduation（Thesis）	17	11	8	6*
小　　计　Subtotal		35	28.5		

十、其它要求

Ⅹ Other Demands

《形势与政策》课程，平均每学期 16 学时，一般按专题进行，在第七学期末考核，计 2 个课外学分，具体由学校学生发展指导中心负责组织落实。

Situation & Policy, a 16 hours/term with 2 credits course, is taught according to topics and tested at the end of the 7th term . The course will be arranged by the University Students' Affairs' Department in each school.

轮机工程专业本科培养方案
Undergraduate Program for Specialty in Marine Engineering Education Scheme

一、业务培养目标

Ⅰ Educational Objectives

本专业培养德、智、体、美等全面发展的、具备船舶动力和轮机系统专业知识的、符合国际海员培训、发证和值班标准公约(STCW)马尼拉修正案和我国海船船员适任标准要求的、具备远洋船舶 3000KW 及以上轮机员任职资格并能在船舶运输及海洋工程各企事业单位从事轮机操纵和维修、船舶监修与监造工作、海事管理、船机检验等的高级轮机工程技术复合型人才。

To cultivate marine engineers who not only have full-scale development as physical, intellectual, moral, aesthetic education but also possess all professional knowledge of marine engineering, conform with the demands of the provisions of Manila amendments to the STCW Convention and Code and of Seafarer Training, Examination and Certification in China, be qualified for marine engineer of type A. The student can also be engaged in marine engineering maneuvering, maintaining and supervising ship repairing and building work, Maritime management, vessel inspection, etc. in any shipping and ocean engineering enterprises or institution.

二、业务培养要求

Ⅱ Educational Requirement

本专业学生主要学习轮机工程、动力工程方面的基本理论和基本知识，接受识图制图、机械设计、轮机工程运用的基本训练，具有操纵和维修船舶动力装置、船舶自动化和船舶电气设备和对船舶监修、监造的初步能力。毕业生应获得以下几方面的知识和能力：

1．掌握船舶动力装置、电气、液压、气动和机电一体化等方面的基础知识；

2．掌握轮机管理、轮机系统的保养和维修等基本技术；

3．具有操纵轮机设备，履行船舶监修、监造职责的初步能力；

4．熟悉有关海船运输安全和环保方面的公约和法律法规；

5．了解海洋运输船舶的发展动态；

6．具有轮机英语会话及阅读专业英文资料，书写业务函件的能力；

7．掌握船舶数据库管理及应用的知识；

8．掌握文献检索查询的基本方法，具有初步的科学研究和实际工作能力。

本专业学生通过学校及国家有关主管机关规定的考试和评估，具备规定的海上资历后，可取得海洋船舶轮机员适任证书。

The student can obtain the diploma of undergraduate course and the bachelor's degree of engineering after 4 years’ studying and training of specialized courses of undergraduate course and passed through examinations and verifications stipulated by school and relevant national authorities. After possessing the seniority stipulated, the student can obtain certificate of competency for seafarers according to relevant regulations. The graduate should obtain the knowledge and abilities as follows:

1. Familiarize basic knowledge of power device, electric equipment, hydraulic pressure, pneumatic, and mechanic-electric.

2. Familiarize basic skill of marine engineering management, maintain and overhaul for marine machine systems. Be able to maintain, repair and use the shipping electromechanical equipment; have operation ability in basic technologies, such as lathe work, bench work, and welding etc

3. Possess the ability to operate marine power plant and supervise shipping building.

4. Familiarize the regulation, rule and convention about maritime safety and pollution prevention.

5. Know the development of maritime transportation.

6. Have the ability to read English data onboard a ship, write engineer' report, memos, Fax & E-mail, communicate with a foreigner.

7. Have the knowledge of database administration and application on board.

8 Know the basic ways and means to research and query literature and possess the ability to carryout out science study and do practice job.

三、主干学科

Ⅲ Major Disciplines

主干学科：船舶与海洋工程、动力工程及工程热物理、控制科学与工程

Major Disciplines：Marine and ocean engineering, Power engineering and engineering thermal physical, Control science and engineering

四、专业核心课程与专业特色课程

Ⅳ Core Courses and Characteristic Courses

专业核心课程：船舶柴油机、船舶辅机、船舶电气设备与系统、轮机自动化、轮机维护与修理、船舶管理、轮机工程英语

Core Courses: Marine Diesel Engine, Marine Auxiliary Machinery, Marine Electric Equipment and System，Marine Machinery Automation, Marine Machinery Maintenance and Repair, Ship Management, English of Marine Engineering

专业特色课程：船舶油处理及防污染、轮机自动化系统微机应用、船舶电站自动控制系统与管理、轮机工程测试技术、船舶电气管理工艺

Characteristic Courses: Marine Oily Handling and Pollution Prevention, Application of Microcomputer in Marine Engineering, Auto-control System and Management of Marine Power Station, Experimental Technique of Marine Engineering, Maintenance and Repair Technique of Marine Electric Equipment

五、计划学制与学位

Ⅴ Length of School and Degree

修业年限：四年

Duration： Four Years

授予学位：工学学士

Degree Granted: Bachelor of Engineer

六、最低毕业学分规定

Ⅵ Graduation Credit Criteria

课程类别 / 课程性质	通识课程 Public Basic Courses	学科大类课程 Basic Disciplinary Courses	专业课程 Specialized Courses	个性课程 Personalized Course	集中性实践 Practice Courses	课外学分 Study Credit after Class	总学分 Total Credits
必修课 Required Courses	38	32.5	46.5	\	39	\	190
选修课 Elective Courses	9	5	10	\	\	10	

七、课程修读指导建议

Ⅶ Recommendations on Course Studies

1、考研学生建议选修概率论与数理统计 B。

We suggest that the students preparing for postgraduate entrance examination choose probability and mathematical statistics B.

2、辅修第二专业毕业设计为 6 个学分，辅修第二专业必须修满 50 学分以上。

You will receive 6 credits after you finish the graduation design of the associate's degree and you have to get more than 50 credits for your graduation.

3、修读第二学位的学生请注意所选课程开设的学期和修读顺序，以便合理学习。

In order to make reasonable arrangements, the students with an associate's degree should pay attention to the course schedule, such as the time and order of the courses you choose.

八、理论教学建议进程表

Ⅷ Theory Course Schedule

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including						先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur	建议修读学期 Suggested Term		
通识课程 Public Basic Courses	必修课 Required Courses	4220001111	思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	3	48			8		1-6		
		4220002111	中国近现代史纲要 Outline of Chinese Contemporary and Modern History	2	32					1-6		
		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		1-6		
		1060001111	军事理论 Military Theory	1	32			16		1-4		
		1050001131	心理健康教育 Mental Health Education	1	16					1-2		
		4220005111	马克思主义基本原理 Marxism Philosophy	3	48			8		1-6		
		4210001110	体育 1 Physical Education Ⅰ	1	32					1		
		4210002110	体育 2 Physical Education Ⅱ	1	32					2	体育 1	
		4210003110	体育 3 Physical Education Ⅲ	1	32					3	体育 2	
		4210004110	体育 4 Physical Education Ⅳ	1	32					4	体育 3	
		4030002110	大学英语 A1 College English A 1	3	64				16	1		
		4030003110	大学英语 A2 College English A Ⅱ	3	64				16	2	大学英语 A1	
		4030004110	大学英语 A3 College English A Ⅲ	3	64				16	3	大学英语 A2	
		4030005110	大学英语 A4 College English A Ⅳ	3	64				16	4	大学英语 A3	
		4120017110	大学计算机基础 Foundation of Computer	2	32		12			1		
		4030121111	英语听力与口语 A1 English Listening and Speaking A 1	1.0	16					1		
		4030122111	英语听力与口语 A2 English Listening and Speaking A Ⅱ	2.0	32					2	英语听力与口语 A1	
		4120023110	计算机程序设计基础(C 语言) Fundamentals of Computer Program Design (C Language)	3	48		12			2		
		小 计 Subtotal		38	784		24	64	64			

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including						先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extracur	建议修读学期 Suggested Term		
	选修课 Elective Courses	创新创业类 Innovation and Entrepreneurship Courses		全校学生要求至少取得 9 学分，建议在每个类别中分别至少选修一门课程。All students are required to obtain at least nine credits, and suggested to select at least one course in five categories respectively.								
		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										
学科大类课程 Basic Disciplinary Courses	必修课 Required Courses	4150094111	专业导论 Introduction of Marine Engineering Specialty	1	16					1		
		4050063110	高等数学 A1 Advanced Mathematics A Ⅰ	5	80					1		
		4050064110	高等数学 A2 Advanced Mathematics A Ⅱ	5	80					2	高等数学 A1	
		4180017111	工程图学 B Engineering Graphics B	4	64		4			2		
		4050229111	线性代数 Linear Algebra	2.5	40					3		
		4050460131	大学物理 B Physics B	5	80					3		
		4050461131	物理实验 B Physics Testing B	1	32	32				4		
		4180031111	机械设计基础 Foundational of Mechanical Design	3.5	56	6				4		
		4100011111	电工与电子技术基础 B Fundamentals of Electrical Engineering & Electric Technology B	5.5	88	20				4		
		小　　计　Subtotal		32.5	536	58	4					
	选修课 Elective Courses	4140114111	交通运输工程概论 B Panorama of Transportation Equipment B	1.5	24					2		
		4050334111	轮机化学 Marine Engineering Chemistry	1.5	24					2		
		4140034111	船舶原理 D Principle of Naval Architecture D	1.5	24					3		
		4050058111	概率论与数理统计 B Probability and Mathematics Statistic B	3	48					3		
		4150055111	跨文化交流 Intercultural Communication	1.5	24					3		
		4150184131	能源概论 Introduction to Energy	2	32					5		
		4150035111	船机检验 Marine Equipment Survey	2	32	4				6		
		小　　计　Subtotal		13	208	4						
		修读说明：要求至少选修 5 学分。 NOTE: Minimum subtotal credits: 5.										

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including						先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur	建议修读学期 Suggested Term		
专业课程 Specialized Courses	必修课 Required Courses	4070072111	工程材料 Engineering Materials	2.5	40	4				2		
		4180045111	金属工艺学 B Metal Technology B	2.5	40	4				3		
		4140129111	流体力学 D Fluid Mechanics D	2	32	6				4		
		4140077111	工程力学 B Engineering Mechanics B	4	64					4		
		4140078111	工程力学 B 实验 Mechanics Experiments B	0.5	16	16				4		
		4180023111	互换性与测量技术 B Interchange Ability & Measurement B	2	32	4				4		
		4150050111	工程热力学与传热学 A Thermodynamics for Engineering and Heat Transfer A	4.5	72	12				4		
		4150065111	轮机自动化基础 Foundation of Marine Automatic Control	2	32	4				5		
		4150006111	船舶柴油机 Marine Diesel Engine	4	64	4				5		
		4150196131	船舶辅机 Marine Auxiliary Machinery	5	80	10				5		
		4150011111	船舶电气设备与系统 Marine Electric Equipment and System	4.0	64	8				5		
		4150059111	轮机工程英语阅读上 English of Marine Engineering	2	32					5		
		4150059111	轮机工程英语阅读下 English of Marine Engineering	2.5	40					6	轮机工程英语阅读上	
		4150064111	轮机自动化 Marine Machinery Automation	3.5	56	6				6		
		4150062111	轮机维护与修理 Marine Machinery Maintenance and Repair	2	32	6				6		
		4150198131	船舶管理 Ship Management	3.5	56					7		
		小　计　Subtotal		46.5	752	84						
	选修课 Elective Courses	4160035111	航海概论 Navigation Outline	1.5	24					2		
		4150066111	轮机自动化系统微机应用 Application of Microcomputer in Marine Engineering System	2	32	4				5		
		4150057111	轮机工程测试技术 Experimental Technique of Marine Engineering	1.5	24	4				5		
		4150046111	工程常用计算分析软件基础 The Basic of Common Calculating and Analyzing Software in Engineering	2	32					5		
		4150001111	PLC 原理及应用 Principle & Application of PLC	2	32	4				5		
		4150027111	船舶计算机管理 Shipboard Computer Application	1.5	24		12			5		

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including						先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur	建议修读学期 Suggested Term		
		4150033111	船舶油处理及防污染（限选） Marine Oily Handling and Pollution Prevention	2	32	4				6		
		4150058111	轮机工程英语会话（限选） Oral English of Marine Engineering	1.5	24					6		
		4150013111	船舶电站自动控制系统与管理 Auto-control System and Management of Marine Power Station	2	32					6		
		4150037111	电力推进系统 Electric Propulsion System	1.5	24					6		
		4150023111	船舶管系与工艺设计 Install Technology of Ship Piping System	3	48					6		
		4150199131	船舶 LNG 燃料动力概论 Introduction to the LNG Marine Power	2	32					7		
		4150029111	船舶推进控制系统 Control System of Electric Propulsion Installation	1.5	24					7		
		4150134121	内燃机排放及后处理 Internal-combustion Engine Emissions and After-treatment Technology	2	32	4				7		
		4150124111	内燃机匹配与优化 Matching and Optimization of Internal-combustion Engine	2	32					7		
		4150159121	船用内燃机检测、诊断与控制技术 Monitoring, Diagnosis and Control Technology on Marine Engine	2	32					7		
		4150267111	轮机工程基础（限选） Marine Engineering Foundation	2	32					7		
		4150015111	船舶动力装置安装工艺学 Marine Power Plant Installation Technology	3	48	2				7		
		小　　计　Subtotal		35	560	30						
		修读说明：要求至少选修 10 学分。 NOTE: Minimum subtotal credits: 10.										

九、集中性实践教学环节建议进程表

Ⅸ Practice Schedule

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crs	建议修读学期 Suggested Term	第二专业 Second Major
1060002110	军事训练 Military Training	3	1.5	1	
4160096111	专业证书培训（含保安共计六个合格证） Training for Certificates	6	6	2(暑假)	
4100069111	电工电子实习 B Practice in Electrical Engineering & Electronics B	1	1	4	
4180109111	机械设计基础课程设计 Course Design of Mechanical Design	2	2	4	
4150101111	柴油机拆装实习 Diesel Engine Dismantling Practice	2	2	5	

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crs	建议修读学期 Suggested Term	第二专业 Second Major
4150102111	船舶认识实习 Vessel Recognized Practice	3	3	5	
4180112111	机械制造工程实训 A1 Machinery Manufacturing Engineering Practice	2	2	3	
4180135111	机械制造工程实训 A2 Machinery Manufacturing Engineering Practice	3	3	6	
4180139111	机械制造工程实训 A3 Machinery Manufacturing Engineering Practice	1	1	7	
4150151121	动力设备操作训练 Auxiliary Machinery General Training	1	1	7	
4150152121	动力设备拆装训练 Auxiliary Machinery Dismantling Training	1	1	7	
4150153121	船舶电站操作与管理训练 Operating and Management of Marine Power Station	1	1	7	
4150154121	船舶电气设备管理与工艺训练 Management and Techniques of Marine Electrical Equipment	1	1	7	
4150150121	机舱资源管理训练 Engine Room Resource Management	0.5	0.5	7	
4150155121	轮机英语听力与会话训练 Training for Marine Engineering	1	1	7	
4150107111	轮机模拟器训练 Marine Engineering Simulator	1	1	7	
4150098111	毕业实习和毕业设计 Practice or Design for Graduation	17	11	8	
小　　计　Subtotal		46.5	39		

十、其它要求

Ⅹ Other Demands

《形势与政策》课程，平均每学期 16 学时，一般按专题进行，在第七学期末考核，计 2 个课外学分，具体由学校学生发展指导中心负责组织落实。

Situation & Policy, a 16 hours/term with 2 credits course, is taught according to topics and tested at the end of the 7th term . The course will be arranged by the University Students' Affairs' Department in each school.

能源与动力工程专业（卓越工程师班）本科培养方案
Undergraduate Program for Specialty in Energy & Power Engineering (Excellent Engineer Class)

一、业务培养目标

Ⅰ Educational Objectives

本专业培养具备能源与动力系统和自动化方面基础理论知识、较强工程实践能力，适应社会发展和行业需求，能在国民经济相关部门从事能源及动力工程的设计、制造、使用、管理和研究与开发等方面工作的，具有“适应能力强、实干精神强、创新意识强”的高级工程技术人才。

To cultivate advanced technical talents who have all round development in morality, intelligence and physique, posses the creative spirit and practical ability, adapt the need of socialist market economy, have the practice ability and basic knowledge of Energy & Power System and Automation Engineering, can be engaged in the work including design of power machine and power engineering, manufacture, use, manage, R&D and so on in varies national economic department.

二、业务培养要求

Ⅱ Educational Requirement

本专业学生主要学习动力机械工程及工程热物理的基础理论知识，学习能源动力系统的理论和技术，接受现代动力工程师的基本训练；具有进行动力系统设备设计、运行、实验研究的基本能力。

毕业生应获得以下几方面的知识和能力：

1.具有较扎实的自然科学基础，较好的人文、艺术和社会科学基础；

2.较系统地掌握本专业的技术理论知识，主要包括工程力学、机械设计基础、流体力学、工程热力学传热学、电工与电子技术、动力系统及自动化理论等基础知识；

3.获得本专业相关的工程实践训练；

4.具有较强的计算机和外语应用能力；

5.具有能源动力系统与自动化所必要的专业知识，了解该学科的前沿知识及其发展趋势；

6.具有较强的自学能力，创新意识和较高的综合素质。

The students mainly study the foundation theories and basic knowledge of power engineering and engineering thermal physics, accept the basic training of power engineer. The undergraduate students would grasp the knowledge and ability illustrated as follows:

1. Grasp necessary basic knowledge and skills on natural science and engineering and have certain humanity, social science knowledge.

2. Systematically grasp necessary basic knowledge and skills on the specialty, mainly including engineering dynamics, the foundation of the machinery design, engineering thermal physics, hydromechanics, electrics and electronics, control theory and management.

3. Get practical training of the specialty.

4. Having good application ability of computer and foreign language.

5. Have specialty knowledge of the thermal and power engineering, and grasp the development of the specialty.

6. Have good self-study ability, creative consciousness and good synthesis nature.

三、主干学科

Ⅲ Major Disciplines

主干学科：船舶与海洋工程，动力工程与工程热物理，机械工程

Major Disciplines: Naval Architecture and Ocean Engineering, Power Engineering and Engineering Thermal Physics, Machine Engineering

四、专业核心课程与专业特色课程

Ⅳ Core Courses and Characteristic Courses

专业核心课程：工程热力学、传热学、内燃机学、动力机械测试技术、动力系统自动化

Core Courses: Engineering Thermodynamics, Heat Transfer, Internal-combustion Engine Theory, Measuring Methodology of Power Machine, Automation of Power System.

专业特色课程：内燃机排放及后处理、内燃机匹配与优化、内燃机监测诊断技术

Characteristic Courses: Internal-combustion Engine Emissions and After-treatment Technology, Internal-combustion Engine, Monitoring and Diagnosis Technology on IC Engine.

五、学制与学位

Ⅴ Length of School and Degree

修业年限：四年

Duration： Four Years

授予学位：工学学士

Degree Granted: Bachelor of Engineer

六、最低毕业学分规定

Ⅵ Graduation Credit Criteria

课程类别 / 课程性质	通识课程 Public Basic Courses	学科大类课程 Basic Disciplinary Courses	专业课程 Specialized Courses	个性课程 Personalized Course	集中性实践 Practice Courses	课外学分 Study Credit after Class	总学分 Total Credits
必修课 Required Courses	35	37	34	\	46	\	190
选修课 Elective Courses	9	6	13	\	\	10	

七、课程修读指导建议

Ⅶ Recommendations on Course Studies

八、理论教学进程表

Ⅷ Theory Course Schedule

课程类别 Course Classifi-cation	课程性质 Course Nature	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	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Ope-ration	实践 Prac-tice	课外 Extra-cur			
通识课程 Public Basic Courses	必修课 Required Courses	4220002111	中国近现代史纲要 Outline of Chinese Contemporary and Modern History	2	32					1-6		
		4220001111	思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	3	48			8		1-6		
		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		1-6		
		4220005111	马克思主义基本原理 Marxism Philosophy	3	48			8		1-6		
		1060001111	军事理论 Military Theory	1	32			16		2		
		4030002111	大学英语 A1 College English A1	3	64				16	1		
		4030003111	大学英语 A2 College English A2	3	64				16	2	4030002111	
		4030004111	大学英语 A3 College English A3	3	64				16	3	4030002111	
		4030005111	大学英语 A4 College English A4	3	64				16	4	4030002111	
		4210001111	体育 1 Physical Education1	1	32					1		
		4210002111	体育 2 Physical Education2	1	32					2	4210001111	
		4210003111	体育 3 Physical Education3	1	32					3	4210001111	
		4210004111	体育 4 Physical Education4	1	32					4	4210001111	
		4120017111	大学计算机基础 Foundation of Computer	2	32		12			1		
		4120023111	计算机程序设计基础（C 语言） Fundamentals of Computer Program Design (C Language)	3	48		12			2		
		1050001131	心理健康教育 Mental Health Education	1	16					1		
		小 计 Subtotal		35	736		24	64	64			
	选修课 Elective Courses	创新创业类 Innovation and Entrepreneurship Courses		全校学生要求至少取得 9 学分，建议在每个类别中分别至少选修一门课程。 All students are required to obtain at least nine credits, and suggested to select at least one course in five categories respectively.								
		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										

课程类别 Course Classifi-cation	课程性质 Course Nature	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	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Ope-ration	实践 Prac-tice	课外 Extra-cur			
学科大类课程 Basic Disciplinary Courses	必修课 Required Courses	4150094011	专业导论 Introduction to Specialty	1	16					1		
		4050063110	高等数学 A1 Advanced Mathematics AⅠ	5	80					1		
		4050064110	高等数学 A2 Advanced Mathematics AⅡ	5	80					2	4050063110	
		4180015111	工程图学 A1 Engineering Graphics AⅠ	3.5	56					1		
		4180016111	工程图学 A2 Engineering Graphics AⅡ	2.5	40					2	4180015111	
		4050024111	大学物理 C Physics C	4.5	72					2		
		4050224111	物理实验 B Physics Lab. B	1	32	32				3		
		4050229111	线性代数 Linear Algebra	2.5	40					3		
		4080062110	机械原理 Mechanism and Machine Theory	3.5	56	4				4		
		4100011111	电工与电子技术基础 B Electrical Engineering B	5.5	88	20				4		
		4050058111	概率论与数理统计 B Probability and Mathematical Statistics B	3	48					4		
		小 计 Subtotal		37	608	56						
	选修课 Elective Courses	4150184131	能源概论 Introduction to Energy	2	32					4		
		4140033111	船舶原理 C Theoretical Naval Architecture C	2	32					4		
		4150021111	船舶辅机 B Marine Auxiliary Machine B	2	32	4				4		
		4150081111	信号分析与处理 Signal Analysis and Disposal5	2	32					5		
		4150168121	流体计算软件应用基础 Fundamental of computational fluid dynamics	2	32		8			5		
		4150054111	机械振动分析与应用 Mechanical Vibration Analysis	2	32	2				6		
		小 计 Subtotal		12	192	6	8					
		修读说明：要求至少选修 6 学分 NOTE: Minimum subtotal credits : 6										
专业课程 Specialized Courses	必修课 Required Courses	4070072111	工程材料 Engineering Materials	2.5	40	4				2		
		4140077111	工程力学 B Engineering Mechanics B	4	64					3		
		4140078111	工程力学 B 实验 Mechanics Experiments B	0.5	16	16				3		
		4180023111	互换性与测量技术 B Interchange Ability & Measurement B	2	32	4				3		
		4140129111	流体力学 D Fluid Mechanics D	2	32	6				4		

课程类别 Course Classifi-cation	课程性质 Course Nature	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	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Ope-ration	实践 Prac-tice	课外 Extra-cur			
		4180045111	金属工艺学 B Metal Technology B	2.5	40	4				4		
		4080060110	机械设计 Mechanical Design	4	64	6				5		
		4150049111	工程热力学 A Engineering Thermodynamics A	3.5	56	4				5		
		4150005111	传热学 Heat Transfer	3	48	4				5		
		4150120111	动力机械测试技术 B Measurement of Heat Energy & Power Machinery B	2	32	10				4		
		4150157121	自控原理与应用 Principle and Application of Auto-control	2	32	4				4		
		4150201131	内燃机学 Internal Combustion Engine Theory	4	64	4				5		
		4150041111	动力系统自动化 Automation of Power System	2	32	4				6		
		小 计 Subtotal		34	552	70						
	选修课 Elective Courses	4150137121	内燃机仿真计算 Simulation of Internal-combustion Engine	2	32			10		6		
		4150140121	内燃机专业英语 English of Internal-combustion Engine	2	32					6		
		4150185131	动力机械工程微机应用技术 Computer Application Technology in Power	2	32	4				5		
		4150133121	内燃机电子控制技术 The Electronic Control on IC Engine	2	32	4				6		
		4150134121	内燃机排放及后处理 Internal-combustion Engine Emissions and After-treatment Technology	2	32	2				6		
		4150186131	内燃机监测诊断技术 Monitoring and Diagnosis Technology on IC Engine	2	32	2				6		
		4150156121	内燃机燃烧学 Combustion Theory of IC Engine	2	32					5		
		4150124111	内燃机匹配与优化 Internal-combustion Engine	2	32					6		
		4150187131	气体发动机 Gas engine	2	32	2				6		
		4150188131	内燃机增压技术 Internal combustion engine supercharging technology	2	32	2				6		
		4150132121	混合动力导论 Introduction to Hybrid Power	2	32					6		
		4150096111	汽车概论 B Structure of Automobile A	2	32					6		
		小 计 Subtotal		24	384	16		10				
		修读说明：要求至少选修 13 学分 NOTE: Minimum subtotal credits: 13										

九、集中性实践教学进程表

Ⅸ Practice Training Table

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crs	建议修读学期 Suggested Term	第二专业 Second Major
1060002111	军事训练 Military Training	3	1.5	1	
4180113111	机械制造工程实训 B Machinery Manufacturing Engineering Practice B	4	4	3	
4150103111	船舶认知实验 The Ships Cognition Tests(Dispersing)	1	1	4(分散)	
4100069111	电工电子实习 B Practice in Electrical Engineering & Electronics B	1	1	5	
4180109111	机械设计基础课程设计 Course Design of Mechanical Design	2	2	5	
4150193131	热力学和传热学课程设计 Course Design on Thermodynamics and Heat Transfer	1	1	5	
4150200131	柴油机结构认知与实操 The Structure Cognition and Operation for Diesel Engine.	2	2	5	
4150129111	生产实习 Specialty Practice	16	16	7	
4150130111	能源动力系统设计实践 Design Practice of Energy & Power System	5	5	7	
4150148121	实验能力综合训练 Experiment Ability Combined Training	0.5	0.5	8（分散）	
4150144121	毕业实习 Graduation Practice	2	2	8	
4150145121	毕业设计（论文） Design for Graduation（Thesis）	15	10	8	
小　　计　Subtotal		52.5	46		

十、其它要求

Ⅹ Other Demands

《形势与政策》课程，平均每学期 16 学时，一般按专题进行，在第六学期末考核，计 2 个课外学分，具体由学校学生发展指导中心负责组织落实。

Situation & Policy, a 16 hours/term with 2 credits course, is taught according to topics and tested at the end of the 6th term . The course will be arranged by the University Students' Affairs' Department in each school.

轮机工程专业（卓越工程师班）本科培养方案
Undergraduate Program for Specialty in Marine Engineering Education Scheme (Excellent Engineer Class)

一、业务培养目标

Ⅰ Educational Objectives

本专业培养德、智、体、美等全面发展的、具备船舶动力和轮机系统专业知识的、符合国际海员培训、发证和值班标准公约(STCW)马尼拉修正案和我国海船船员适任标准要求的、具备远洋船舶 3000KW 及以上轮机员任职资格并能在船舶运输及海洋工程各企事业单位从事轮机操纵和维修、船舶监修与监造工作、海事管理、船机检验等的高级轮机工程技术复合型人才。

To cultivate marine engineers who not only have full-scale development as physical, intellectual, moral, aesthetic education but also possess all professional knowledge of marine engineering, conform with the demands of the provisions of Manila amendments to the STCW Convention and Code and of Seafarer Training, Examination and Certification in China, be qualified for marine engineer of type A. The student can also be engaged in marine engineering maneuvering, maintaining and supervising ship repairing and building work, Maritime management, vessel inspection, etc. in any shipping and ocean engineering enterprises or institution.

二、业务培养要求

Ⅱ Educational Requirement

本专业学生主要学习轮机工程、动力工程方面的基本理论和基本知识，接受识图制图、机械设计、轮机工程运用的基本训练，具有操纵和维修船舶动力装置、船舶自动化和船舶电气设备和对船舶监修、监造的初步能力。毕业生应获得以下几方面的知识和能力：

1．掌握船舶动力装置、电气、液压、气动和机电一体化等方面的基础知识；

2．掌握轮机管理、轮机系统的保养和维修等基本技术；

3．具有操纵轮机设备，履行船舶监修、监造职责的初步能力；

4．熟悉有关海船运输安全和环保方面的公约和法律法规；

5．了解海洋运输船舶的发展动态；

6．具有轮机英语会话及阅读专业英文资料，书写业务函件的能力；

7．掌握船舶数据库管理及应用的知识；

8．掌握文献检索查询的基本方法，具有初步的科学研究和实际工作能力。

本专业学生通过学校及国家有关主管机关规定的考试和评估，具备规定的海上资历后，可取得海洋船舶轮机员适任证书。

The student can obtain the diploma of undergraduate course and the bachelor's degree of engineering after 4 years’ studying and training of specialized courses of undergraduate course and passed through examinations and verifications stipulated by school and relevant national authorities. After possessing the seniority stipulated, the student can obtain certificate of competency for seafarers according to relevant regulations. The graduate should obtain the knowledge and abilities as follows:

1. Familiarize basic knowledge of power device, electric equipment, hydraulic pressure, pneumatic, and mechanic-electric.

2. Familiarize basic skill of marine engineering management, maintain and overhaul for marine machine systems. Be able to maintain, repair and use the shipping electromechanical equipment; have operation ability in basic technologies, such as lathe work, bench work, and welding etc

3. Possess the ability to operate marine power plant and supervise shipping building.

4. Familiarize the regulation, rule and convention about maritime safety and pollution prevention.

5. Know the development of maritime transportation.

6. Have the ability to read English data onboard a ship, write engineer' report, memos, Fax & E-mail, communicate with a foreigner.

7. Have the knowledge of database administration and application on board.

8 Know the basic ways and means to research and query literature and possess the ability to carryout out science study and do practice job.

三、主干学科

Ⅲ Major Disciplines

主干学科：船舶与海洋工程、动力工程及工程热物理、控制科学与工程

Major Disciplines：Marine and ocean engineering, Power engineering and engineering thermal physical, Control science and engineering

四、专业核心课程与专业特色课程

Ⅳ Core Courses and Characteristic Courses

专业核心课程：船舶柴油机、船舶辅机、船舶电气设备与系统、轮机自动化、轮机维护与修理、船舶管理、轮机工程英语

Core Courses: Marine Diesel Engine, Marine Auxiliary Machinery, Marine Electric Equipment and System，Marine Machinery Automation, Marine Machinery Maintenance and Repair, Ship Management, English of Marine Engineering

专业特色课程：船舶油处理及防污染、轮机自动化系统微机应用、船舶电站自动控制系统与管理、轮机工程测试技术、船舶电气管理工艺

Characteristic Courses: Marine Oily Handling and Pollution Prevention, Application of Microcomputer in Marine Engineering, Auto-control System and Management of Marine Power Station, Experimental Technique of Marine Engineering, Maintenance and Repair Technique of Marine Electric Equipment

五、计划学制与学位

Ⅴ Length of School and Degree

修业年限：四年

Duration： Four Years

授予学位：工学学士

Degree Granted: Bachelor of Engineer

六、最低毕业学分规定

Ⅵ Graduation Credit Criteria

课程类别 / 课程性质	通识课程 Public Basic Courses	学科大类课程 Basic Disciplinary Courses	专业课程 Specialized Courses	个性课程 Personalized Course	集中性实践 Practice Courses	课外学分 Study Credit after Class	总学分 Total Credits
必修课 Required Courses	38	32.5	40	\	45.5	\	190
选修课 Elective Courses	9	5	10	\	\	10	

七、课程修读指导建议

Ⅶ Recommendations on Course Studies

1、考研学生建议选修概率论与数理统计 B。

We suggest that the students preparing for postgraduate entrance examination choose probability and mathematical statistics B.

2、辅修第二专业毕业设计为 6 个学分，辅修第二专业必须修满 50 学分以上。

You will receive 6 credits after you finish the graduation design of the associate's degree and you have to get more than 50 credits for your graduation.

3、修读第二学位的学生请注意所选课程开设的学期和修读顺序，以便合理学习。

In order to make reasonable arrangements, the students with an associate's degree should pay attention to the course schedule, such as the time and order of the courses you choose.

八、理论教学建议进程表

Ⅷ Theory Course Schedule

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including						先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur	建议修读学期 Suggested Term		
通识课程 Public Basic Courses	必修课 Required Courses	4220001111	思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	3	48			8		1-6		
		4220002111	中国近现代史纲要 Outline of Chinese Contemporary and Modern History	2	32					1-6		
		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		1-6		
		1060001111	军事理论 Military Theory	1	32			16		1-4		
		1050001131	心理健康教育 Mental Health Education	1	16					1		
		4220005111	马克思主义基本原理 Marxism Philosophy	3	48			8		1-6		
		4210001110	体育 1 Physical Education Ⅰ	1	32					1		
		4210002110	体育 2 Physical Education Ⅱ	1	32					2	体育 1	
		4210003110	体育 3 Physical Education Ⅲ	1	32					3	体育 2	
		4210004110	体育 4 Physical Education Ⅳ	1	32					4	体育 3	
		4030002110	大学英语 A1 College English A 1	3	64				16	1		
		4030003110	大学英语 A2 College English A Ⅱ	3	64				16	2	大学英语 A1	
		4030004110	大学英语 A3 College English A Ⅲ	3	64				16	3	大学英语 A2	
		4030005110	大学英语 A4 College English A Ⅳ	3	64				16	4	大学英语 A3	
		4120017110	大学计算机基础 Foundation of Computer	2	32		12			1		
		4030121111	英语听力与口语 A1 English Listening and Speaking A 1	1.0	24					1		
		4030122111	英语听力与口语 A2 English Listening and Speaking A Ⅱ	2.0	24					2	英语听力与口语 A1	
		4120023110	计算机程序设计基础(C 语言) Fundamentals of Computer Program Design (C Language)	3	48		12			3		
		小 计 Subtotal		38	784		24	64	64			

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including						先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur	建议修读学期 Suggested Term		
	选修课 Elective Courses	创新创业类 Innovation and Entrepreneurship Courses		全校学生要求至少取得 9 学分，建议在每个类别中分别至少选修一门课程。 All students are required to obtain at least nine credits, and suggested to select at least one course in five categories respectively.								
		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										
学科大类课程 Basic Disciplinary Courses	必修课 Required Courses	4150094111	专业导论 Introduction of Marine engineering Specialty	1	16					1		
		4050063110	高等数学 A1 Advanced Mathematics A Ⅰ	5	80					1		
		4050064110	高等数学 A2 Advanced Mathematics A Ⅱ	5	80					2	高等数学 A1	
		4180017111	工程图学 B Engineering Graphics B	4	64		4			1		
		4050229110	线性代数 B Linear Algebra B	2.5	40					3		
		4050023111	大学物理 B Physics B	5	80					3		
		4050224111	物理实验 B Physics Testing B	1	32	32				4		
		4180031111	机械设计基础 Foundational of Mechanical Design	3.5	56	6				4		
		4100011111	电工与电子技术基础 B Fundamentals of Electrical Engineering & Electric Technology B	5.5	88	20				4		
		小　　计　Subtotal		32.5	592	58	4					
	选修课 Elective Courses	4140114111	交通运输工程概论 B Panorama of Transportation Equipment B	1.5	24					2		
		4050334111	轮机化学 Marine Engineering Chemistry	1.5	24					2		
		4140034111	船舶原理 D Principle of Naval Architecture D	1.5	24					3		
		4050058111	概率论与数理统计 B Probability and Mathematics Statistic B	3	48					3		
		4150055111	跨文化交流 Intercultural Communication	1.5	32					3		
		4150184131	能源概论 Introduction to Energy	2	32					5		
		4150048111	工程技术经济学 Technical Economy	1	16					5		
		小　　计　Subtotal		12	192							
		修读说明：要求至少选修 5 学分。 NOTE: Minimum subtotal credits: 5.										

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including						先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur	建议修读学期 Suggested Term		
专业课程 Specialized Courses	必修课 Required Courses	4140129111	流体力学 D Fluid Mechanics D	2	32	6				4		
		4140077111	工程力学 B Engineering Mechanics B	4	64					4		
		4140078111	工程力学 B 实验 Mechanics Experiments B	0.5	16	16				4		
		4070072111	工程材料 Engineering Materials	2.5	40	4				2		
		4180045111	金属工艺学 B Metal Technology B	2.5	40	4				3		
		4180023111	互换性与测量技术 B Interchange Ability & Measurement B	2	32	4				4		
		4150050111	工程热力学与传热学 A Thermodynamics for Engineering and Heat Transfer A	4.5	72	12				4		
		4150006111	船舶柴油机 Marine Diesel Engine	4	64	4				5		
		4150006111	船舶辅机 Marine Auxiliary Machinery	5	80	10				5		
		4150011111	船舶电气设备与系统 Marine Electric Equipment and System	4.0	64	8				5		
		4150064111	轮机自动化 Marine Machinery Automation	3.5	56	6				6		
		4150062111	轮机维护与修理 Marine Machinery Maintenance and Repair	2	32	6				6		
		4150198131	船舶管理 Ship Management	3.5	56	4				7		
		小 计 Subtotal		40	640	88						
	选修课 Elective Courses	4160035111	航海概论 Navigation Outline	1.5	24					2		
		4150066111	轮机自动化系统微机应用 Application of Microcomputer in Marine Engineering System	2	32	4				5		
		4150057111	轮机工程测试技术 Experimental Technique of Marine Engineering	1.5	24	4				5		
		4150065111	轮机自动化基础（限选） Foundation of Marine Automatic Control	2	32	4				5		
		4150059111	轮机工程英语阅读上（限选） English of Marine Engineering	2	32					5		
		4150059111	轮机工程英语阅读下（限选） English of Marine Engineering	2.5	40					6	轮机工程英语阅读上	
		4150001111	PLC 原理及应用 Principle & Application of PLC	2	32	4				5		
		4150027111	船舶计算机管理 Shipboard Computer Application	1.5	24		12			5		
		4150033111	船舶油处理及防污染 Marine Oily Handling and Pollution Prevention	2	32	4				6		

课程类别 Course Classifi-cation	课程性质 Course Nature	课程编号 Course Number	课 程 名 称 Course Title	学分 Crs	学时分配 Including						先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Ope-ration	实践 Prac-tice	课外 Extra-cur	建议修读学期 Suggested Term		
		4150013111	船舶电站自动控制系统与管理 Auto-control System and Management of Marine Power Station	2	32					6		
		4150058111	轮机工程英语会话 Oral English of Marine Engineering	1.5	24					6		
		4150023111	船舶管系与工艺设计 Install Technology of Ship Piping System	3	48					6		
		4150267111	轮机工程基础 Marine Engineering Foundation	2	32					7		
		4150199131	船舶 LNG 燃料动力概论 Introduction to the LNG Marine Power	2	32					7		
		小 计 Subtotal		27.5	440	20	12					
		修读说明：要求至少选修 10 学分。 NOTE: Minimum subtotal credits: 10.										

九、集中性实践教学环节建议进程表

Ⅸ Practice Schedule

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crs	建议修读学期 Suggested Term	第二专业 Second Major
1060002110	军事训练 Military Training	3	1.5	1	
4100069111	电工电子实习 B Practice in Electrical Engineering & Electronics B	1	1	4	
4160096111	专业证书培训（含保安共计六个合格证） Training for Certificates	6	6	2(暑假)	
4180112111	机械制造工程实训 A1 Machinery Manufacturing Engineering Practice	2	2	3	
4180135111	机械制造工程实训 A2 Machinery Manufacturing Engineering Practice	3	3	6	
4180139111	机械制造工程实训 A3 Machinery Manufacturing Engineering Practice	1	1	7	
4180109111	机械设计基础课程设计 Course Design of Mechanical Design	2	2	4	
4150101111	柴油机拆装实习 Diesel Engine Dismantling Practice	2	2	5	
4150102111	船舶认识实习 Vessel Recognized Practice	3	3	4（暑假）	
4150107111	轮机管理专业实习 Marine Engineering Management Practice	13	13	7	
4150098111	毕业实习和毕业设计 Practice or Design for Graduation	17	11	8	
小 计 Subtotal		53	45.5		

十、其它要求

Ⅹ Other Demands

《形势与政策》课程，平均每学期 16 学时，一般按专题进行，在第七学期末考核，计 2 个课外学分，具体由学校学生发展指导中心负责组织落实。

Situation & Policy, a 16 hours/term with 2 credits course, is taught according to topics and tested at the end of the 7th term . The course will be arranged by the University Students' Affairs' Department in each school.