

# 海洋科学专业培养方案

## 一、专业培养目标

本专业培养具有良好的思想道德素质和较高的人文科学素养，具有“品德优良、基础厚实、知识广博、专业精深”，具备坚实的数学、物理、化学、生物学、地质学以及海洋学方面的基本理论、基本知识和实验技能，系统掌握海洋地质、海洋环境等专业知识和专项技能，具有能在海洋科学及相关领域从事科研、教学、管理及海上作业的高素质专门人才和具有自主学习能力、批判思维能力、创新创业能力、国际视野及正确海洋观的海洋科学类专门人才。

## 二、毕业要求

毕业生应获得以下几方面的知识和能力：

- (1) 掌握数学、物理、化学等方面的基本理论和基本知识；
- (2) 掌握海洋科学的基本理论和基本知识，具有从事海洋调查研究的基本能力；
- (3) 掌握资料查询、文献检索及运用现代信息技术获取相关信息的基本方法；具有一定的实验设计，归纳、整理、分析实验结果，撰写论文，参与学术交流的能力；
- (4) 熟悉国家海洋科学技术政策、知识产权、安全条例等有关政策和法规；
- (5) 了解海洋科学的发展动向和相近专业的一般原理和知识，能跟踪国际海洋科学研究的方向；
- (6) 既具有一定的科学思维、创新创业和国际交流能力，又富有人文素质和社会担当的合格人才。

## 三、主干学科

海洋科学。

## 四、学制与学位

学制四年。学生修满规定的最低毕业学分，达到毕业要求后，授予理学学士学位。

## 五、核心课程

核心课程分海洋地质方向和海洋生态与环境方向两类。

海洋地质方向的课程包括：结晶学与矿物学、岩石学（含晶体光学）、海洋地球化学、海底与沉积盆地构造分析、沉积岩与沉积相、海洋地球物理探测、古生物与地史、海洋微体古生物学、第四纪地质与环境、海洋地质与环境专业英语、学科前沿课等。

海洋生态与环境方向的课程包括：海洋地质微生物学、海洋生态学、海洋地球化学、环境化学、遥感技术与应用、综合岩石学、环境监测与评价、古生物与地史、海底与沉积盆地构造分析、环境生物技术及应用、海岸带环境地质、第四纪地质与环境、海洋地质与环境专业英语、学科前沿课等。

实践课程：军事理论及训练、思想政治社会实践、实验物理、实验化学。学院专业综合性实验课：北戴河海洋地质认知实习（3周）、周口店教学实习（5周）、专业实习（4周）、海洋地质与环境实验技术、海底沉积物与岩石综合分析、环境微生物实验技术和毕业设计（论文）（12周）。

# **Undergraduate Program in Marine Sciences**

## **1. Academic Objectives**

This major requires good ideological and moral qualities and higher humanistic qualities with “good virtues, solid foundation, broad knowledge, sophisticated profession”. Students will become talented persons with solid foundations of basic theories, basic knowledge and experiment skills in mathematics, physics, chemistry, biology, geology and marine sciences, systematically grasping professional knowledge and specialized skills of marine geology and marine resources, with the self-learning ability, critical thinking ability, innovation and entrepreneurship ability, international perspective and accurate ocean views.

## **2. Graduation Requirements**

Graduates should acquire knowledge and ability in the following aspects:

- (1) Grasping basic theories and knowledge of mathematics, physics, chemistry and etc.
- (2) Grasping basic theories and knowledge of ocean sciences, having basic ability of ocean investigation research.
- (3) Grasping basic methods of data and material inquiry, literature search and obtaining information using modern information technology, having specific abilities of experiment design, summary, results analysis, writing papers and academic exchange.
- (4) Being familiar with technology and policy of ocean sciences, intellectual property and safety regulations.
- (5) Having an understanding of development of ocean sciences and general theories and knowledge of relevant majors, with the ability of tracking international ocean scientific researches.
- (6) With specific abilities of scientific thinking, innovation and pioneering and international exchange and being qualified talents of humanistic quality and social responsibility.

## **3. Main disciplines**

Marine Sciences.

## **4. Length of Schooling and Degree**

The length of schooling is four years of full-time study. Students will be awarded the Bachelor Degree of Science when they have completed the required minimum credits and have met all other requirements.

## **5. Core Courses**

The core courses are divided into Marine Geology and Marine Ecological Environment.

The core courses of Marine Geology: Crystallography and Mineralogy, Petrology (Inc. Crystal Optics), Marine Geochemistry, Structural Analysis of Seafloor and Sedimentary Basins, Sedimentary Petrology and Facies, Marine Geophysics Exploration, Paleontology and Geologic History, Marine Micropaleontology, Quaternary Geology and Environment, Specialty English for Marine Geology and Environment, Discipline Frontiers etc.

The core courses of Marine Environment: Marine Geomicrobiology, Marine Ecology, Marine Geochemistry, Environmental Chemistry, Remote Sensing Technology and Application, Comprehensive Petrology, Environmental Monitoring and Assessment, Paleontology and Geologic History, Structural Analysis of Seafloor and Sedimentary Basins, Environmental Biological Technology and Applications, Environmental Geology in the Coastal Zone, Quaternary Geology and Environment, Specialty English for Marine Geology and Environment, Discipline Frontiers etc.

Practice and innovation teaching are emphasized by this major as well. Practice teaching includes

military theory and training, political social practice, experimental physics, experimental chemistry, professional and comprehensive experiment course of the school marine geosciences field trip in Beidaihe (3 weeks), geological survey field trip in Zhoukoudian (5 weeks), professional practice (4 weeks), experimental technique of marine geology and Environmental Sciences, comprehensive analysis technology of seafloor rocks, environmental microbiology experiment technology and graduate design (thesis) (12 weeks).

## 六、最低毕业总学分要求及学分分配 (Minimum Required Credits and Distribution)

课程模块 Course Module	课程类别 Course Classification	学时数 Hours	学分 Credits	学 期 Semester										
				1	2	1 夏	3	4	2 夏	5	6	3 夏	7	8
通识教育 Liberal Education	通识教育必修课程 Required Courses of General Education	730	41	11	13	1	4	5		3	1			2
	通识教育选修课程 Selective Courses of General Education	192	12											
专业教育 Professional Education	学科基础课程 Disciplinary Fundamental Courses	712	44.5	10	17		11.5	3		3				
	专业核心课程 Specialized Fundamental Courses	448\496	28\31				2\3	12\10		8\9	6\9			
	专业拓展课程 Specialized Development	80	5				2				4		2	
实践教育 Practical Education	课程实践 Course Practice	26 周\224	29		3	7	1	2	5	0\2	2\0	4		6
	课外实践 Extracurricular practice		6											
必修课总学分 Required course credits				142.5\145.5										
选修课总学分 Elective course credits				23										
最低毕业总学分 Total Credits				165.5\168.5										

## 七、课程设置 (Curriculum)

### 1、通识教育必修课程 (Required Courses of General Education): 730 学时(730 hours), 41 学分(41 Credits)

课程代码 Code	课程名称 Courses Name	总学时 Hours	学分 Credits	讲课 学时 Lec.	实验 学时 Exp.	线上 学时 Online	考核方式 Assessment	开课学期 Semester	备注 Notes
GR181009	思想道德与法治 Ideological Morality and Rule of Law	48	3	40	8		考试 Exam	1	
GR181008	中国近现代史纲要 Essentials of Modern Chinese History	48	3	40	8		考试 Exam	2	
GR182014	马克思主义基本原理 Fundamental Principles of Marxism	48	3	40	8		考试 Exam	3	
GR182022	毛泽东思想和中国特色社会主义理论体系 概论 Introduction to Mao Zedong Thoughts and Theoretical System of the Chinese Characteristic Socialism	32	2	32			考试 Exam	4	
GR182024	习近平新时代中国特色社会主义思想概论 Introduction to Xi Jinping Thoughts on Socialism with Chinese Characteristics in the New Era	32	2	28	4		考试 Exam	5	
GR181013	形势与政策 (1) Situation and Policy (1)	4	0.25	4			考查 Term paper	1	
GR181014	形势与政策 (2) Situation and Policy (2)	4	0.25	4			考查 Term paper	2	
GR181015	形势与政策 (3) Situation and Policy (3)	4	0.25	4			考查 Term paper	3	
GR181016	形势与政策 (4) Situation and Policy (4)	4	0.25	4			考查 Term paper	4	
GR181017	形势与政策 (5) Situation and Policy (5)	4	0.25	4			考查 Term paper	5	
GR181018	形势与政策 (6) Situation and Policy (6)	4	0.25	4			考查 Term paper	6	
GR181019	形势与政策 (7)	4	0.25	4			考查	7	

	Situation and Policy (7)						Term paper		
GR181020	形势与政策 (8) Situation and Policy (8)	4	0.25	4			考查 Term paper	8	
GR301004	大学生职业生涯规划与就业指导 (1) Career Planning and Employment Guidance for University Students (1)	20	1	16	4		考试 Exam	2	
GR303005	大学生职业生涯规划与就业指导 (2) Career Planning and Employment Guidance for University Students (2)	18	1	12	6		考试 Exam	6	
GR301005	大学生心理素质教育 (1) Mental Health (1)	16	1	16	0		考查 Term Paper	1	
GR303005	大学生心理素质教育 (2) Mental Health (2)	16	1	16	0		考查 Term Paper	5	
GR301024	劳动教育与双创实践(1)Labor Education and Innovation and Entrepreneurship Practice(1)	16	1	16			考查 Term Paper	2	
GR303025	劳动教育与双创实践(2)Labor Education and Innovation and Entrepreneurship Practice(2)	16	1	16			考查 Term Paper	6	
GR302008	军事理论 Military Theory	36	1	36	0		考试 Exam	1	
GR081071	大学英语 (1) College English (1)	64	4	64			考试 Exam	1	
GR081072	大学英语 (2) College English (2)	32	2	32			考试 Exam	2	
GR081067	大学英语素质拓展课 Competence-oriented Education for College English	32	2	32			考试 Exam	2	
GR141005	体育 (1) (系列课程) Physical Education (1)(series of courses)	32	1		32		考试 Exam	1	
GR141006	体育 (2) (系列课程) Physical Education (2) (series of courses)	32	1		32		考试 Exam	2	

GR142007	体育 (3) (系列课程) Physical Education (3) (series of courses)	32	1		32		考试 Exam	3	
GR142008	体育 (4) (系列课程) Physical Education (4) (series of courses)	32	1		32		考试 Exam	4	
GR041001	大学计算机 College Computer	32	2	16	16		考试 Exam	1	
GR041003	程序设计基础 A Fundamentals of Programming A	64	4	24	24	16	考试 Exam	2	
总计 Total		730	41	492	222	16			

## 2、通识教育选修课程 (Selective Courses of General Education): 192 学时 (192 hours), 12 学分 (12 Credits)

序号 No.	课程类别 Courses Classification	课程名称 Courses Name	学分 Credits	考核方式 Assessment	开课学期 Semester	备注 Notes
1	人文社科类 (含在线课程) Humanities and Social Sciences Courses (Inc. Online courses)	见附件 1	7	考查 Term Paper	2-8	4 个类别中选修 7 个学分, 其中,《大学生安全教育》(1 学分) 必选。
2	自然科学类 (含在线课程) Natural Science Courses (Inc. Online Courses)	见附件 2		考查 Term Paper	2-8	
3	自然文化类 Natural Culture Courses	见附件 3		考查 Term Paper	2-8	
4	体育与健康类 Sports and health courses	见附件 4		考查 Term Paper	5-8	
5	创新创业教育类 Innovation and Entrepreneurship Courses (Inc. Online Courses)	见附件 5	3	考查 Term Paper	2-8	选修 3 个学分, 其中《新生研讨课》(1 学分) 必选。
6	审美与艺术类 Aesthetics and Art Courses	见附件 6	2	考查 Term Paper	2-4	
总计 Total			12			

## 3、学科基础课程 (Disciplinary Fundamental Courses): 712 学时 (712 hours), 44.5 学分 (44.5 Credits)

课程 代码	课程名称 Courses Name	总学时 Hours	学分 Credits	讲课 学时	实验 学时	线上 学时	考核 方式	开课 学期	备注 Notes
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Code				Lec.	Exp.	Online	Assessment	Semester	
DR191003	高等数学 B (1) Advanced Mathematics B (1)	96	6	96			考试 Exam	1	专业 选
DR191004	高等数学 B (2) Advanced Mathematics B (2)	64	4	64			考试 Exam	2	
DR192005	线性代数 Linear Algebra	32	2	32			考试 Exam	3	
DR192006	概率论与数理统计 Probability and Mathematics Statistic	48	3	48			考试 Exam	4	
DR191008	大学物理 (1) College Physics (1)	48	3	48			考试 Exam	2	
DR192009	大学物理 (2) College Physics (2)	48	3	48			考试 Exam	3	
DR191010	大学化学 College Chemistry	48	3	48			考试 Exam	1	
DR111001	海洋生物学 Marine Biology	48	3	28	20		考试 Exam	2	
DR011036	地球科学概论 Geosciences	64	4	32	32		考试 Exam	2	
DR112002	海洋科学概论 Introduction to Marine Sciences	48	3	48			考试 Exam	2	
DR113008	海洋化学 Marine Chemistry	48	3	24	24		考试 Exam	3	
DR112003	海洋地质学 Marine Geology	56	3.5	48	8		考试 Exam	3	
DR113101	物理海洋学 Physical Oceanography	48	3	40	8		考试 Exam	5	
DR110035	海洋科学专业导论 Introduction to Marine Science	16	1	16			考查 Term Paper	1	
总计 Total		712	44.5	620	92				

#### 4、专业核心课程 (Specialized Core Courses)



海洋地质方向 (Marine Geology): 448 学时(448 hours), 28 学分(28 Credits)

课程代码 Code	课程名称 Courses Name	总学时 Hours	学分 Credits	讲课学时 Lec.	实验学时 Exp.	线上学时 Online	考核方式 Assessment	开课学期 Semester	备注 Notes
SR112102	结晶学与矿物学 Crystallography and Mineralogy	32	2	20	12		考试 Exam	3	
DR112004	岩石学 (含晶体光学) Petrology (Inc. Crystal Optics)	64	4	32	32		考试 Exam	4	
SR113014	海洋地球化学 Marine Geochemistry	48	3	38	10		考试 Exam	5	
SR112103	海底与沉积盆地构造分析 Structural Analysis of Seafloor and Sedimentary Basins	32	2	24	8		考试 Exam	4	
DR112006	沉积岩与沉积相 Sedimentary Petrology and Facies	48	3	42	6		考试 Exam	4	
DR112007	海洋地球物理探测 Marine Geophysics Exploration	64	4	56	8		考试 Exam	6	
SR112104	古生物与地史 Paleontology and Geologic History	48	3	40	8		考试 Exam	4	
SR113013	海洋微体古生物学 Marine Micropaleontology	48	3	24	24		考试 Exam	5	
SR113011	第四纪地质与环境 Quaternary Geology and Environment	32	2	32			考试 Exam	5	
SR113017	海洋地质与环境专业英语 Specialty English for Marine Geology and Environment	32	2	32			考试 Exam	6	
总计 Total		448	28	340	108				

海洋生态与环境方向 (Marine Ecological Environment): 496 学时(496 hours), 31 学分(31Credits)

课程 代码 Code	课程名称 Courses Name	总学时 Hours	学分 Credits	讲课 学时 Lec.	实验 学时 Exp.	线上 学时 Online	考核 方式 Assessment	开课 学期 Semester	备注 Notes
SR113012	海洋地质微生物学 Marine Geomicrobiology	48	3	32	16		考查 TermPaper	3	
SR113015	海洋生态学 Marine Ecology	48	3	40	8		考试 Exam	6	
SR113014	海洋地球化学 Marine Geochemistry	48	3	38	10		考试 Exam	5	
SR113105	环境化学 Environmental Chemistry	32	2	20	12		考试 Exam	5	
SR113106	遥感技术与应用 Remote Sensing Technology and Application	32	2	20	12		考试 Exam	6	
SR112107	综合岩石学 Comprehensive Petrology	48	3	30	18		考试 Exam	4	
SR113108	环境监测与评价 Environmental Monitoring and Assessment	32	2	16	16		考试 Exam	6	
SR112104	古生物与地史 Paleontology and Geologic History	48	3	40	8		考试 Exam	4	
SR112103	海底与沉积盆地构造分析 Structural Analysis of Seafloor and Sedimentary Basins	32	2	24	8		考试 Exam	4	
SR112109	环境生物技术及应用 Environmental Biological Technology and Applications	32	2	24	8		考试 Exam	4	
SR113110	海岸带环境地质 Environmental Geology in the Coastal Zone	32	2	32			考试 Exam	5	
SR113011	第四纪地质与环境 Quaternary Geology and Environment	32	2	32			考试 Exam	5	
SR113017	海洋地质与环境专业英语 Specialty English for Marine Geology and	32	2	32			考试 Exam	6	

	Environment								
总计 Total		496	31	380	116				

5、专业拓展课程 (Specialized Development Courses): 80 学时(80 hours), 5 学分(5 Credits)

课程代码 Code	课程名称 Courses Name	总学时 Hours	学分 Credits	讲课学时 Lec.	实验学时 Exp.	线上学时 Online	考核方式 Assessment	开课学期 Semester	备注 Notes
SR113111	海洋地质资源勘探与评价 Exploration and evaluation of Marine geological resources	48	3	36	12		考试 Exam	6	(三选二)
SS114112	环境政策与法规 Environmental Policies and Regulations	32	2	32			考查 Term Paper	7	
SR114018	海洋调查技术 Marine Surveying Technology	32	2	30	2		考试 Exam	3	
	学科前沿课 Discipline Frontiers	16	1	16			考查 Term Paper	6	必选
总计 Total		80	5	80					

6、课程实践 (Course Practice): 26 周+224 学时(26 weeks and 224 hours), 29 学分(29 Credits)

课程代码 Code	课程名称 Courses Name	总学时 Hours	学分 Credits	考核方式 Assessment	开课学期 Semester	备注 Notes
PR311003	军事技能训练 Military Theory and Practice	2 周	2	考查 Term Paper	1 夏	
PR181010	思想政治社会实践 Political Social Practice	32 学时	2	考查 Term Paper	1 夏	
PR191045	实验物理 (1) Physics Experiments (1)	24 学时	1	考试 Exam.	2	
PR192046	实验物理 (2) Physics Experiments (2)	24 学时	1	考试 Exam.	3	

PR191047	实验化学 Chemistry Experiments	48 学时	2	考试 Exam.	2	
PR111028	北戴河海洋认知实习 Marine Geosciences Field trip in Beidaihe	3 周	3	考查 Term Paper	1 夏	
PR012046	周口店地质教学实习 Geological Survey Field trip in Zhoukoudian	5 周	5	考查 Term Paper	2 夏	
PR113029	生产实习(海洋科学专业) Professional Practice	4 周	4	考查 Term Paper	3 夏	
PR114030	毕业论文(海洋科学专业) Graduation Thesis	12 周	6	考查 Term Paper	8	
PR113031	海洋地质与环境实验技术 Experimental Technique of Marine Geology and Environmental Sciences	48 学时	2	考查 Term Paper	4	
PR113113	海底沉积物与岩石综合分析 Comprehensive Analysis Technology of Seafloor Rocks	48 学时	2	考查 Term Paper	6	地质方向
PR113114	环境微生物实验技术 Environmental Microbiology Experiment Technology	48 学时	2	考查 Term Paper	5	生态与环境方向
PR114030	毕业论文 Graduation Thesis	12 周	6	考查 Term Pape	8	
总计 Total			29			

## 7、课外实践 (Extracurricular Practice): 6 学分 (6 Credits)

包括主题教育活动、社会实践、志愿服务、勤工助学、学科竞赛、文体活动、创新创业活动、劳动实践等，其学分的认定按照教务处相关规定执行。

Extracurricular practice include Theme Education, Social Practice, Volunteer Service, Work-study Program, Discipline Competition, Cultural and Sports Activities, Innovative and Entrepreneurial Activities, Labor Practice and so on. The recognition of the credits for extracurricular practice shall be

implemented according to the regulations of Academic Affairs Office.