海洋观测方法课程教学大纲

<table>
<tr><td colspan="6">课程基本信息（Course Information）</td></tr>
<tr><td>课程代码
（Course Code）</td><td>MS3802</td><td>*学时
（Credit Hours）</td><td>48</td><td>*学分
（Credits）</td><td>3</td></tr>
<tr><td rowspan="2">*课程名称
（Course Name）</td><td colspan="5">海洋观测方法</td></tr>
<tr><td colspan="5">Methods of Oceanngraphic Observation</td></tr>
<tr><td>课程性质
(Course Type)</td><td colspan="5">专业必修课
Specialty compulsory course</td></tr>
<tr><td>授课对象
（Target Audience）</td><td colspan="5">本科生
Undergraduate student</td></tr>
<tr><td>授课语言
(Language of Instruction)</td><td colspan="5">中文
Chinese</td></tr>
<tr><td>*开课院系
（School）</td><td colspan="5">海洋学院
School of Oceanography</td></tr>
<tr><td>先修课程
（Prerequisite）</td><td colspan="5">高等数学、线性代数、大学物理
Higher mathematics, Linear algebra, General physics,</td></tr>
<tr><td>授课教师
（Instructor）</td><td colspan="2">曾铮，王显威</td><td>课程网址
(Course Webpage)</td><td colspan="2"></td></tr>
<tr><td>*课程简介
（Description）</td><td colspan="5">本课程是针对海洋科学专业本科生开设的专业必修课，旨在让学生掌握海洋观测方法，了解相关技术的发展历程、发展特点和发展趋势；在此基础上熟悉海洋观测平台及其通用技术；重点讲解水温观测与遥测，盐度观测与遥测，海色和海发光，海浪与内波观测，海流观测，冰川-海洋交互作用观测；海冰观测与遥测；结合观测需求，指导学生开展观测平台设计开发与集成应用动手实践，并掌握各种分析图表的绘制，海洋调查的数据处理。通过本课程学习，让学生更好地理解和掌握海洋观测平台、遥感监测方法及其关键技术。</td></tr>
<tr><td>*课程简介
（Description）</td><td colspan="5">This course is a compulsory course for undergraduate students majoring in ocean science. It aims to provide students with a comprehensive understanding of marine observation, exploration and operation technologies, understand their history, characteristics and trends; understand the observation platforms and key technologies; understand the hydrology, meteorology, biology, geology and geophysics, chemistry, physics, polarity and other contents involved in ocean observation, exploration and operation. This course contributes to lay the foundation for students to have better understand of ocean in-situ observing systems and remote sensing technologies.</td></tr>
<tr><td colspan="6">课程教学大纲（Course Syllabus）</td></tr>
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<tr><td>*学习目标(Learning Outcomes)</td><td>1． 熟悉海洋观测平台、遥感及其通用技术；
2． 能够掌握水温观测、盐度观测的仪器与方法以及遥感监测原理；
3． 能够掌握海色和海发光的观测仪器与方法以及遥感监测原理；
4． 能够掌握海浪与内波观测的仪器与方法；
5． 能够掌握海流观测的仪器与方法；
6． 能够掌握海冰观测的仪器与方法以及遥感监测原理；
7． 能够掌握冰川-海洋交互作用观测的仪器与方法以及遥感监测原理；
8． 能够掌握海洋观测仪器的集成与应用；
9． 能够掌握海洋观测平台的设计开发与观测实践。

1． Familiar with general technology of ocean observation platform;
2． Master the instruments and methods of water temperature observation and salinity observation;
3． Master the observation instruments and methods of sea color and sea luminescence;
4． Master the instruments and methods of sea ice observation;
5． Master the instruments and methods of ocean wave and internal wave observation;
6． Master the instruments and methods of ocean current observation;
7． Master the layout of various analysis charts and data processing for ocean surveys;
8． Master the design and integration of multiparameter ocean observation instrument;
9． Master the design and application of ocean observation platform.</td></tr>
<tr><td>*教学内容
进度安排及要求
(Class Schedule & Requirements)</td><td>
<table>
<tr><th>教学内容</th><th>学时</th><th>教学方式</th><th>作业及要求</th><th>基 本要求</th><th>考查方式</th></tr>
<tr><td>海洋观测方法绪论
Introduction to the oceanngraphic observation</td><td>1</td><td>课堂教学
Class teaching</td><td>1 次
Once</td><td></td><td>课堂提问与讨论
Class questions and discussions</td></tr>
<tr><td>海洋观测传感器及通用技术
Ocean observation sensors and general technology</td><td>2</td><td>课堂教学
Class teaching</td><td>1 次
Once</td><td></td><td>课堂提问与讨论
Class questions and discussions</td></tr>
<tr><td>海洋观测平台
Ocean observation platforms</td><td>3</td><td>课堂教学
Class teaching</td><td>1 次
Once</td><td></td><td>课堂提问与讨论
Class questions and discussions</td></tr>
<tr><td>海洋温盐观测与遥感监测原理
Remote Sensing of Sea Surface Temperature and Salinity</td><td>5</td><td>课堂教学
Class teaching</td><td>1 次
Once</td><td></td><td>课堂提问与讨论
Class questions and discussions</td></tr>
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	海色观测与遥感监测原理 Remote Sensing of Ocean Color	3	课堂教学 Class teaching	1 次 Once		课堂提问与讨论 Class questions and discussions
	海洋参数的遥感反演 Inversion of Sea Surface Variables using Remote Sensing	2	实验教学 Experimental teaching	1 次 Once		实验报告与讨论 Experimental reports and discussions
	海浪、海流与内波观测及遥测原理 Observation of Ocean Wave, current and Internal Wave	2	课堂教学 Class teaching	1 次 Once		课堂提问与讨论 Class questions and discussions
	海冰遥感监测原理 Remote Sensing of Sea Ice	2	课堂教学 Class teaching	1 次 Once		课堂提问与讨论 Class questions and discussions
	冰川-海洋交互作用观测的仪器方法以及遥感监测原理 In-situ Measurement and Remote Sensing of Glacier-Ocean Interaction	2	课堂教学 Class teaching	1 次 Once		课堂提问与讨论 Class questions and discussions
	海冰、冰山厚度反演 Thickness Inversion of Sea Ice and Iceberg	2	实验教学 Experimental teaching	1 次 Once		实验报告与讨论 Experimental reports and discussions
	海洋多参数观测仪集成与应用实践-I Multiparameter ocean observation instrument design and application-I	3	实验教学 Experimental teaching	1 次 Once		实验报告与讨论 Experimental reports and discussions
	海洋多参数观测仪集成与应用实践-II Multiparameter ocean observation instrument design and application-II	3	实验教学 Experimental teaching	1 次 Once		实验报告与讨论 Experimental reports and discussions
	海洋多参数观测仪集成与应用实践-III Multiparameter ocean	3	实验教学 Experimental teaching	1 次 Once		实验报告与讨论 Experimental

	observation instrument design and application-III					reports and discussions
	智能海洋观测平台设计与制作 I Design practice of ocean observation platform I	3	实验教学 Experimental teaching	1 次 Once		实验报告与讨论 Experimental reports and discussions
	智能海洋观测平台设计与制作 II Design practice of ocean observation platform II	3	实验教学 Experimental teaching	1 次 Once		实验报告与讨论 Experimental reports and discussions
	智能海洋观测平台设计与制作 III Design practice of ocean observation platform III	3	实验教学 Experimental teaching	1 次 Once		实验报告与讨论 Experimental reports and discussions
	智能海洋观测平台设计与制作 IV Design practice of ocean observation platform IV	3	实验教学 Experimental teaching	1 次 Once		实验报告与讨论 Experimental reports and discussions
	智能海洋观测平台设计与制作 V Design practice of ocean observation platform V	3	实验教学 Experimental teaching	1 次 Once		实验报告与讨论 Experimental reports and discussions
*考核方式 (Grading)	出勤分数 5%、作业分数 15%，设计实践项目 40%和期终项目测评 40% Attendance for 5%, Assignments for 15%, Projects for 40% and Final examination for 40%					
*教材或参考资料 (Textbooks & Other Materials)	1. 侍茂崇, 海洋调查方法，海洋出版社，2018 年 2. TI Fossen，Handbook of Marine Craft Hydrodynamics and Motion Control，2011 3. 陈鹰等，海洋技术基础，海洋出版社，2018 年 4. An introduction to ocean remote sensing, Seelye Martin, published in the United States of America by Cambridge University Press, New York, Second Edition, 2014 5.遥感数字图像处理与分析 ENVI5.x 实验教程，杨树文，电子工业出版社，2015					
其它（More）	无 N.A.					
备注（Notes）	无 N.A.					