Model Curriculum of Education (Undergraduate) for Integrated Coastal Management

March, 2012

Ocean Policy Research Foundation

Model Curriculum of Education (Undergraduate) for Integrated Coastal Management

This publication was carried out under the patronage of the Nippon Foundation from the proceeds of motorboat racing.

Published 2012 by Ocean Policy Research Foundation, Tokyo, Japan

Publisher: Masahiro Akiyama
Ocean Policy Research Foundation (Ship & Ocean Foundation)
1-15-16 Tranomon, Minato-ku, Tokyo 105-0001 JAPAN
Tel:+81-3-3502-1848 Fax:+81-3-3502-2127
http://www.sof.or.jp/en/

First Printing ISBN 978-4-88404-278-3

The digital version of this book can be found at <http://www.sof.or.jp/en/>.

This report is published with the support of The Nippon Foundation.

Introduction

Various human and industrial activities are concentrated in coastal areas, but an appropriate perspective has been missing to manage the land and ocean in an integrated manner, leading to various problems such as the deterioration of the marine environment, the decline of fisheries, and conflicts over use and development. The integrated coastal management has been widely introduced around the world, becoming standard internationally, in order to address these kinds of situations, and this has also been discussed as one of the twelve basic measures under the Basic Act on Ocean Policy enacted in 2007.

However, progress has been slow in Japan towards measures for the integrated management of coastal areas, and there is a deficit of expertise to support these efforts. Thus, with the support of the Nippon Foundation through grants for our Foundation's boat race, we have implemented a three year study since 2010 entitled "Research into Curriculum of Education for Integrated Coastal Management".

This study seeks to build interdisciplinary education and research systems in universities etc. related to integrated coastal management, and to contribute to the development of the human resources needed to manage coastal areas, as well as the promotion and expansion of integrated coastal management throughout Japan.

This booklet summarizes a proposed Model Curriculum of Education for Integrated Coastal Management at the undergraduate level, according to the results of our 2011 research to mark the second year of this project. This draft educational curriculum model aims to propose an ideal curriculum for the purpose of establishing an independent undergraduate program for the study of integrated coastal management. We hope that the various universities will be able to base their education in integrated coastal management on the model outlined in this booklet.

It is hoped that this booklet will contribute to the dissemination of education on integrated coastal management, and that it will further promote integrated coastal management.

March 2012

Ocean Policy Research Foundation
Masahiro Akiyama, Chairman

Study into the Educational Curriculum
for Integrated Coastal Management

Committee Members (Japanese Alphabetical Order)

Chairman	Shin Kisugi	Professor, Vice President/Director, Open University of Japan Professor Emeritus, Yokohama National University
	Tsuyoshi Sasaki	Associate Professor, Department of Cultural Ocean Policy, Tokyo University of Marine Science and Technology
	Hideaki Shiroyama	Professor, Graduate School of Law and Politics, University of Tokyo
	Izumi Seki	Associate Professor, Department of Maritime Civilizations, Tokai University
	Makoto Tsuchiya	Professor, Graduate School of Natural Sciences, Faculty of Marine Science, University of the Ryukyus
	Hiroshi Terashima	Managing Director, Ocean Policy Research Foundation
	Hiroyuki Nakahara	Adjunct Professor, Integrated Marine Education and Research Center, Yokohama National University Managing Director, Research Institute for Ocean Economics
	Kimio Fukami	Professor, Vice President/Director, Kochi University
	Osamu Matsuda	Professor Emeritus, Hiroshima University
	Tetsuo Yanagi	Chief Professor, Graduate School of Engineering Sciences, Research Institute for Applied Mechanics, Kyushu University
	Norihisa Yokouchi	Professor, School of Architecture, College of Science and Technology, Nihon University

Research Members

Hiroshi Terashima	Managing Director, Ocean Policy Research Foundation
Takashi Ichioka	General Manager, Policy Research Department, Ocean Policy Research Foundation
Shigeru Yoneyama	General Manager, Policy Research Department, Ocean

Policy Research Foundation
Yoshinori Sugawara Senior Research Supervisor, Planning and Management,
Ocean Policy Research Foundation
Eri Ota Research Fellow, Policy Research Department,
Ocean Policy Research Foundation
Kazumi Wakita Research Fellow, Policy Research Department,
Ocean Policy Research Foundation
Hideaki Tanoue Research Fellow, Policy Research Department,
Ocean Policy Research Foundation

Model Curriculum of Education (Undergraduate) for Integrated Coastal Management

The following educational curriculum model has been developed for integrated coastal management with a view of the development of an independent Program of Integrated Coastal Management at the undergraduate level.

1. Diploma Policies (Educational Goals)

The integrated coastal management must coordinate the development, utilization and conservation of coastal areas for stakeholders in a variety of fields, and promote the mutual cooperation of parties with differing interests. This curriculum is designed with the purpose of providing a single, independent program for the development of human resources with these abilities.

The undergraduate program has the following four goals:

(1) Acquiring a broad perspective and multidisciplinary knowledge in order to promote the integrated management of coastal areas, against a framework in which the integrated management of coastal areas is led on a regional basis:

(2) Acquiring specialized knowledge in fields of personal interest related to coastal issues.

(3) Acquiring communication skills for the building of consensus and resolution of conflicts among stakeholders.

(4) Acquiring field (project) management skills for planning, implementation, monitoring and evaluation etc.

2. Basic Structure of Educational Organizations and Curriculum

The Integrated Coastal Management Undergraduate Program consists of 1 department (Department of Integrated Coastal Management), and two courses, a Natural Science and Engineering Course and a Social Sciences and Management Course.

Specialist Units (elective units) are divided into several areas, and the two courses are differentiated by varying the numbers of units that need to be taken for graduation, from among a group of specialist units.

The Undergraduate Program for the Model Curriculum of Education for Integrated Coastal Management requires 124 credits for graduation, in accordance with Article 32 of the Undergraduate Program Establishment Standards. These 124 credits are generally broken down as shown below based on undergraduate graduation requirements.

In order to graduate, students must take at least 124 credits in total which consist of: i) 20 credits of compulsory units under Special Foundation Units; ii) 36 or more credits of elective units under Special Units; iii) 4 credits of Internship and 8 credits of Graduation Thesis under Practicum Units; and iv) 56 or more credits under Common Basic Units.

Classification of Course Units	Course Credits
Specialist Foundation Units (Compulsory Units)	20 credits
Specialist Units (Elective Units)	36 credits or more
Internship	4 credits
Graduation Thesis (Policy Brief Proposal or Proposal to Solve a Problem)	8 credits
Common Basic Units	56 credits or more

3. Definition of Unit Areas

(1) Specialist Foundation Units (Compulsory Units): 20 credits

The following group of units are common for all courses, and are compulsory foundation units which give students the basic skills and knowledge related to integrated coastal management.

In addition, within this educational curriculum model, “coastal” refers to the integrated concept of both the water and land, and units are named accordingly.

Fundamental Coastal Science; Marine Environmental Conservation Theory; Fundamental Coastal Disaster Prevention; Fundamental Coastal Industries; Fundamental Integrated Ocean Management Policy; Fundamental Ocean History of Japan and the World; Fundamental Consensus Building; Fundamental Partnerships; Basic Practicum (select 1 corresponding to the course, plus one other, for a total of two)

(2) Specialist Units (Elective Units): 36 or more out of 73 credits

The specialist units (selected compulsory units) which have a varied number of credits depending on the course are divided into Groups A, B and C.

Elective Units Group A: Regardless of which course they belong to, students must select at least 26 credits from the following subgroups ①, ②, and ③ of Selected Compulsory Units Group A.

Sub Groups

① Natural Science Units (Fields of Marine/Coastal Sciences and Environmental Conservation)

Fundamental Marine Ecology; Marine Physics; Coastal and Marine Chemistry; Marine Meteorology; Coastal Zoology; Coastal Botany; Ecosystem Functions; Fisheries Science (Natural Science); Land and Ocean Interaction; Water Pollution Policy

② Engineering Units (Field of Coastal Disaster Prevention)

Environmental Impact Assessment; Coastal Disaster Prevention; Coastal Engineering; Coastal Planning

③ Social Science Units (Fields of Economics, Management, Sociology and Law)

Coastal Fisheries Resource Management; Fundamental Marine Transport; Ocean Energy and Mineral Resource Management; Fisheries Science (Social Science); Coastal Sociology; Coastal Tourism; Integrated Ocean Management Policy Theory I; Integrated Ocean Management Policy Theory II – Integrated Management Policies for Exclusive Economic Zones and the Continental Shelf; Integrated Ocean Management and Planning; Domestic Ocean Laws I; Domestic Ocean Laws II; International Ocean Management Legislation.

Elective Units Group B: These units teach how to build consensus and strengthen cooperation between the various entities and organizations that are involved in practice in the regional integrated management of coastal areas. Students in each course must complete at least 4 credits from this group.

Consensus Building/Partnership Units

Consensus Building; Partnership Theory; Marine and Coastal Literacy; NPO Theory

Elective Units Group C: These units allow students in small groups to enhance their practical approaches to specific techniques for the management of coastal areas. Students in each course must complete at least 6 credits from this group.

Coastal Management Technology/Practical Sub Groups

①Natural Science Units

Experimental Marine Environmental Studies; Observational Marine Training; Biostatistics

②Engineering Units

GIS/Remote Sensing I; GIS/Remote Sensing II

③Social Science Units

Project Design and Evaluation; Field Research Methodology; Seminars

(3) Practicum Units (Compulsory): 12 credits

In addition to the above compulsory and selected compulsory units, graduates are also required to undergo an internship (4 credits) and to complete a graduation thesis (8 credits), to give them hands-on experience in fields related to integrated coastal management.

The graduation thesis is expected to involve proposals for policy-making or solving problems, and is to be developed in conjunction with the seminar in Group C.

The above ideas are summarized in the table below. With regard to the unit names, these are not meant to be set, but to offer a broad idea of the concepts involved. Since there are no established names for many units related to education in integrated coastal management, the unit names here are only meant to be illustrative.

With regard to “units from other disciplines”, it is assumed that these units are based on the various educational goals of individual faculties, and this curriculum model does not intend to provide specific examples.

4. Unit Structure for Specialist Course (Undergraduate Faculty of Integrated Coastal Management)

Unit Class.	Unit Names		Credits
Specialist Foundation Units (Compulsory) 20 credits Depending on Course, 2 out of 3 compulsory	Fundamental Coastal Science		2
	Marine Environmental Conservation		2
	Fundamental Coastal Disaster Prevention		2
	Fundamental Coastal Industries		2
	Fundamental Integrated Ocean Management Policy		2
	Fundamental Ocean History of Japan and the World		4
	Fundamental Consensus Building		2
	Fundamental Partnerships		2
	Basic Practicum (Natural Sciences)		1
	Basic Practicum (Engineering)		1
	Basic Practicum (Social Sciences)		1
Specialist Units (Selected Compulsory Units) A 26/52 credits	**Natural Science Units (Fields of Marine, Coastal Sciences and Environ. Conservation) 20 credits**	Fundamental Marine Ecology	2
		Marine Physics	2
		Coastal and Marine Chemistry	2
		Marine Meteorology	2
		Coastal Zoology	2
		Coastal Botany	2
		Ecosystem Functions	2
		Fisheries Science (Natural Science)	2
		Land and Ocean Interaction	2
		Water Pollution Policy	2
	Engineering Units (Field of Coastal Disaster Prevention) 8 credits	Environmental Impact Assessment	2
		Coastal Disaster Prevention	2
		Coastal Engineering	2
		Coastal Planning	2

	Social Science Units (Fields of Economics, Management, Sociology and Law) 24 credits		Coastal Fisheries Resource Management	2
			Fundamental Marine Transport	2
			Ocean Energy and Mineral Resource Management	2
			Fisheries Science (Social Science)	2
			Coastal Sociology	2
			Coastal Tourism	2
			Integrated Ocean Management Policy Theory I	2
			Integrated Ocean Management Policy Theory II – Integrated Management Policies for Exclusive Economic Zones and the Continental Shelf	2
			Integrated Ocean Management and Planning	2
			Domestic Ocean Laws I	2
			Domestic Ocean Laws II	2
			International Ocean Management Legislation	2
Specialist Units (Selected Compulsory Units) B 4/8 credits	**Consensus Building and Partnership Units 8 credits**		Consensus Building	2
			Partnership Theory	2
			Marine and Coastal Literacy	2
			NPO Theory	2
Specialist Units (Selected Compulsory Units) C 6/13 Credits	**Coastal Management Techniques and Practice**	①Natural Science Units	Experimental Marine Environmental Studies	1
			Observational Marine Training	1
			Analytical Practical Chemistry	1
			Biostatistics	2
		② Engineering	GIS・Remote Sensing I/II	4(2 each)
		③Social Units	Project Design and Evaluation	1
			Field Research Methodology	1
			Seminars (Direction on writing proposals for policy-making or solving problems)	2
Practicum Units 12 Credits	Internships			4
	Graduation Thesis (Proposal for Policy-making or Solving Problem)			8

5. Comparison of Diploma Policies

		(1)Broad Perspective and Multidisciplinary Knowledge	(2)Communication Skills	(3)Project Management Skills	(4)Specialiged Knowledge
	Compulsory Units	○	○	○	○
Specialist Units (Selected Compulsory Units) A	**①Natural Science Units (Marine and Coastal Sciences and Environmental Conservation)**	○			○
	②Engineering Units (Coastal Disaster Prevention)	○			○
	③Social Science Units (Economics, Management, Sociology and Law)	○			○
Specialist Units (Selected Compulsory Units) B	**Consensus Building and Partnerships**		○		○
Specialist Units (Selected Compulsory Units) C	**Coastal Management Techniques and Practice**			○	○