MINISTRY OF EDUCATION

NHA TRANG UNIVERSITY

PROFILE

MASTER PROGRAM TAUGHT IN ENGLISH

Subject: Agricultural Economics

(Marine ecosystem management and climate change)

Code: 60620115

Khanh Hoa, 10/2014

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I. GENERAL INFORMATION ABOUT THE SCHEME

1. Name of Scheme:

Scheme of Master of English Language training, Agricultural Economics major (specializing in Marine Ecosystem Management and Climate Change).

2. Brief of Training Program:

- Name of program:

+ Vietnamese: **Quản lý hệ sinh thái biển và biến đổi khí hậu.**

+ English: **Marine Ecosystem Management and Climate Change.**

- Training specialty: Agricultural Economics; Code: 60620115.

- Training degree: Master.

- Training language: English Language.

- Training orientation: Research

- Training mode: Credit

- The total credits of entire course: 60 credits

- Training form: Regular, full time.

- Training time: 2 years

- Training and licensing facility : Nha Trang University, 02 Nguyễn Đình Chiểu street, Nha Trang city, Vietnam. The representative: Ph.D. Vũ Văn Xứng – President of Nha Trang University

- involved international training facilities:

+ Tromso University, Breivika, 9037 Tromsø, Norway;

+ Bergen University, Muséplassen 2, 5006 Bergen, Norway; and

+ Ruhuna University, Wellmdama, Matara, Sri Lanka.

The representative of international training facilities is Ph.D Kathrine Tveiteras from Tromso University.

3. Number of training course and planning time:

This scheme plans to enroll and to organize 3 training courses (5 years) and starts to implement from 2015.

4. Training target:

The expected training target of each course is from 20- 30 students chosen from the total training target of Master Degree of Nha Trang University every year.

5. Expense:

Expense for this scheme is partly financed by NORHED Project. This project will grant full scholarships for six students per training course and training expense for six students received these scholarships.

The students not being eligible for scholarship have to pay fees based on the fees rate of training course in Vietnamese (program on a large scale) according to regulation of Nha Trang University.

II. SCHEME TARGET

Developing and implementing the Master of English language training program in agriculture economy major specialized in Marine Ecosystem Management and Climate Change, chaired by Nha Trang University with the involvement of some international Universities, aims to following targets:

1. Providing students with knowledge and skills of economic management within focusing on the impacts of society, environment, climate change on the

development process of agriculture economy and marine ecosystem.

2. Improving capacity for the faculty of Nha Trang University in the form of teaching some modules, enabling Vietnamese professors, doctors, lecturers to have academic exchange, or directly play a role as official participants in this program, and contribute to the sustainable development process of Nha Trang university in particular and of Vietnamese fisheries in general.

3. Expanding and deepening the experts' experience from Norway, Sri Lanka and other countries to apply on Vietnamese specific Fisheries condition, significantly contributing to domestic and abroad expertise activities of the experts from Norway, Sri Lanka and other countries.

4. Guiding the trainee's Master's thesis into solving problems arising in practice of Vietnam and the other countries in the region by science methodology and specialized knowledge of Norway as well as EU community and the other developed nations.

5. Making the most financial supporting of Norway for Vietnam and the other countries in the region.

6. connecting the cooperative programs with developing requirements of majors related to the management and exploitation of marine resources and climate change in Vietnam and in the other countries in the region. .

III. BASIS OF MAKE THE SCHEME

1. Legal basis:

- Law on Higher Education.

- University Charter was promulgated in the Decision No. 58/2010/QĐ-TTg 22/ 9/2010 of Prime Minister.

- Setting the conditions, records, procedures of training permission, enrollment suspending, withdrawing of the decisions that allow to train majors or specialities oral degrees was issued in the Circular No. 38/2010/TT-BGDĐT 22/12/2010 of Minister of Education and Training.

- Master's degree training Regulation was issued in the Circular No. 15/2014/TT-BGDĐT 15/5/2014 of Minister of Education and Training.

- The program of Philosophy for non-major in Philosophy people with training for Masters, and Ph.D was issued in the Circular No. 08/2013/TT-BGD-ĐT 08/3/2013 of Minister of Education and Training.

- The strategic plan of Nha Trang University from now to 2020 with a vision to 2030.

- Decision No. 414/QĐ-BGD&ĐT-ĐH&SĐH 20/01/2004 of the Ministry of Education and Training on the task of Master of Economy training (Fisheries Economics major, code: 60 31 13) for Fisheries University (now the Nha Trang University).

- Decision No. 3633/QĐ-BGDĐT 12/9/2012 of the Ministry of Education and Training on the conversion of speciality of Master's and Doctoral degrees training in Nha Trang University (in which, the Fisheries Economics major was changed into Agricultural Economics major).

- The agreement between NORAD and Nha Trang University in the framework of the NORHED project about "Combining the ecosystem approach with climate change for fisheries management and aquaculture in Sri Lanka and Vietnam".

2. Training needs:

Marine resources plays an important role in the national economy development. Vietnam is a country with a dense network of rivers, stretching along the coast of the country. Therefore, the field of marine ecosystems management occupies such an important position that it has always took the concern and investment from the Government.

In recent years, due to the rapid socio-economic development along with the abnormal effects of the weather conditions, natural disasters and impacts of

climate change, sea level rise, the recession of marine resources in both quantity and quality. Moreover, Vietnam is evaluated as one of the countries most seriously affected by climate change. Therefore, it's necessary for Vietnam to train the officials specialized in the field of marine ecosystem management and climate change. Particularly there should be officials with high integration ability to be able to acquire the achievements, valuable experience of marine ecosystems management and climate change from the developed countries.

However, Vietnam is still lacking of staffs who have high quality of management and researching in the field of the marine ecosystem management and dealing with the climate change. The universities, policy research institutes are in need of managerial staffs who are capable of better integration, good foreign language, creation to improve, to update training programs, to develop and to lecture international level programs. These capabilities have a strong impact in promoting the process of scientific research, technology transfer, to meet the real needs of our country.

In the context of integration and coping with the climate change and threatened marine ecosystems, the highly qualified manpower training at par with the other countries in the world is essential. The goal is helping Vietnamese staffs cooperate, study, and accept the advanced science and technology, and the valuable experience of the developed countries in the world for marine ecosystem management. Then use them to protect and sustainable develop the marine resources to adapt to climate change and sea level rise.

The cooperation of Nha Trang University and and some international Universities with the finance supporting of Norhed project to organize Master of English Language training, Agriculture Economy major (specializing in Marine Ecosystem Management and Climate Change). It will well respond the above demands, at the same time further strengthen teaching and studying capacity as well as the training quality of marine economic science and environment of Nha Trang University.

3. NORHED Project:

This scheme aims to enhance the capacity of all partners who involved in research and training on the impacts of climate change to marine biodiversity, fisheries, aquaculture, and other coastal communities. The ultimate goal is to create an international research team has both the knowledge and practical competence in the field, to carry out educational programs and research to respond to the climate change situation in the long term.

The scheme will be implemented in conjunction with the Norwegian organization, the Southern partners to establish a training program of international Master specialized marine ecosystem management; and doctoral and postdoctoral training, specialized marine ecosystem management and climate change. We will share the results of scientific research on climate change impacts to integrate the ecosystem approach to fisheries and aquaculture. The project will specifically focus on gender equality and create conditions for women scientists involved in the project framework. Particularly, the project will seek to ensure the ratio of 50: 50 male: female project participants.

Master Training Program was found to train the experts to help other countries cope with the challenges of resource management in the context of global climate change. The program aims to equip students with the knowledge of the risks of climate change and its impacts on coastal areas and provide the necessary skills for the study of scientific climate change management policies. The program also will pay attention to the gender of the partners involved, ie to provide women with opportunities to access the management and vocational education.

Master training program will be taught at Nha Trang University, Vietnam with the cooperation of the other partners on both knowledge and material facilities. The program will be taught in English, thus it’s allowed to enroll

students from all other countries and prioritizing for the countries that are involved training partners with Nha Trang University.

The research of postdoctoral and fellows will be designed in conjunction with a Master training program theme of sustainable development. In other words, the fellows and the students will receive training and instruction in the marine ecosystem management and climate change course.

IV. TRAINING PROGRAM

1. General information of program

Name of program

	Marine Ecosystem Management and Climate Change.
Training level:	**Master**
Training specialty:	**Agriculture Economy**
Code:	**60620115.**
Training orientation:	**Research**
The volume of knowledge:	**60 credits**
Training time:	**2 years, full time**
Training faculty/ institute	**Economy**

2. Training objective:

2.1. General objective:

The training master degree of marine ecosystem management program in the context of climate change aims to the following general objectives:

- Training management staff who have good political qualities and have awareness of serving the people, have highly qualified of modern and specialized knowledge in the field of marine ecosystem management and climate change, aims to meet the needs of economic- social development, and Fisheries and Aquaculture development.

- Equipping students with stable specialized knowledge, practice ability and high adaptability to marine ecosystem changing due to the impact of climate change, have ability to analyze the management policy and settle the issues of marine ecosystems and climate change.

2.2. Output standard:

After finishing the training program, the participants will be able to:

1) Independently study and apply new knowledge into the practical management of marine ecosystems and climate change.

2) Analyse, synthetize and comment independently on economic issues in general and on marine ecosystem management in the context of climate change in particular.

3) Identify the structure and analyze the trends of socio-economic development in the fields of marine ecology and climate change.

4) Analyze the economic policies, economic projects on marine ecology management and climate change.

5) Have a thorough grasp and be capable of scientific research and undergraduate teaching.

6) Use foreign language and information technology for specialized support.

2.3. Working position after graduating:

You have ability to work well at research, training, production and management facilities involving to the major of Marine Ecosystem Management and Climate Change, or going on being researchers.

3. Training objectives:

Those who are working in the payroll or long-term contracts in the state agencies, universities, research institutes, business and administrative offices; students who have graduated from University

4. Program content:

4.1. Program structure

TT	Content	Module	Credit
1.	General knowledge	**2**	**6**
2.	Basic and specialized Knowledge - Compulsory - Optional	**10** 8 2	**39** 29 10
3.	Master's Thesis	-	**15**
	Total	**-**	**60**

4.2. Module catalogue:

Module code	Name of modules	Credit	Prerequisite Module
1. General knowledge		**6**	

POS501	*Philosophy*	4(4-0)	
VIE513	*Introduction to Vietnamese culture*	4(4-0)	
GS501	*Research Methodology*	2(2-0)	
2. Basic and specialized Knowledge		**44**	
2.1. Compulsory modules		**34**	
ECM502	*Micro Economics*	4(4-0)	
ENE503	*Environmental Economics*	3(3-0)	
MEM504	*Marine Resource Economics and Management*	5(5-0)	
MBE505	*Marine Biodiversity and Ecology*	5(5-0)	
CHW506	*Coastal Habitats and Wetlands*	3(3-0)	
MGP507	*Marine Governance and Spatial Planning*	3(3-0)	
RMC508	*Risk and Vulnerability Management with Climate Change*	3(3-0)	
AQF509	*Aquaculture and Fisheries*	3(3-0)	
2.2. Optional modules		**10**	
CNR510	*Conflicts on Natural Resources*	5(5-0)	
SDC511	*Sustainable Aquaculture Development and Climate Change*	5(5-0)	
AEM514	*Aquaculture Economics and Management*	5(5-0)	
CME515	*Coastal Zone Management and Economics*	5(5-0)	

3. Thesis		**15**	
ACE600	Master's Thesis	15	GS501
Total:		**60**	

4.3. Module description:

POS502 Philosophy 4(4-0)

Outline of philosophy, ontologism, dialectic, epistemology, theory of social and economic form, political philosophy, social consciousness, and philosophy of Human being.

VIE513 Introduction to Vietnamese culture 4(4-0)

This module helps the students do a general research about Vietnamese culture, history, rich manners and customs then and now of Vietnamese people in every region. This subject is designed to provide knowledge and tools for students to explore, to analyze, to understand Vietnamese culture and society then and now. The main topics include Vietnamese people and Vietnamese language, history and legislation, ideology and religion, education system, and Vietnamese ethnic groups…

GS501 Research Methodology 2(2-0)

This module provides students with knowledge about research methodology, from the selection and naming themes, planning research, analyzing and evaluating research results, experimental planning, implementation for writing, presenting scientific thesis.

ECM502 Micro Economics 4(4-0)

This is the basic module for Economy and Business Administation. It aims to provide the students with knowledge about: (i) Definitions and tools used in Micro Economics analyzing; (ii) decision- making

models of the agents in the market economy such as the consumers, producers and regulation of State; (iii) Externalities and government intervention to surmount the market failures; (iv) applying game theory to competitive strategy.

ENE503 Environmental Economics 3(3-0)

This module provides the student with some topics of welfare economic applying, some issues related to natural resources and environment. The topics of sustainable development, market failure, environmental pollution and environmental evaluation also will be studied in this module.

MEM504 Marine Resource Economics and Management 5(5-0)

This module provides the student with the understanding of marine resource management from the economic perspective with the topics of fisheries and marine-related industries such as aquaculture and tourism. At the same time, the student will be provided with the knowledge of bio-economic model and to apply into practice. The module also includes determining the value of the marine environment and climate change issues related to the marine environment.

MBE505 Marine Biodiversity and Ecology 5(5-0)

This module helps the students have the basic understanding of ecosystems and marine biodiversity, focused on the tropics and subtropics (e.g. the interaction between organisms and marine animals), the biota and habitat. The biota will be described through their environment adapting, e.g. different geographic regions.

CHW506 Coastal Habitats and Wetlands 3(3-0)

This module provides students with general knowledge of wetlands and underwater habitat in the coasts: ecosystem, the effects of

human being and the environment for this issue. It includes the lectures and field works to the wetlands; therefore, the students can grasp some basic skills of Biology, Ecosystem and their capabilities; and the samples that were collected will be analyzed in the laboratory and then they will be reported by presentation.

MGP507 Marine Governance and Spatial Planning 3(3-0)

This module helps the students understand the regulation of marine recources and coastal areas. The module also provides an overview of the different theoretical perspectives on the marine resources management and development with different forms. Currently approach the problems related to ecosystems and climate change and marine governance. Marine governance is not only about the management of biological resources but also in terms of seabed and spatial planning, along with the target expansion and approaching under a certain framework.

RMC508 Risk and Vulnerability Management with Climate Change 3(3-0)

The module gives students an understanding of climate change and socio-economic effect. Especially, the students will study about climate change and risk management. In addition, they will also discuss about measures to overcome and adapt to climate change.

AQF509 Aquaculture and Fisheries 3(3-0)

This course provides students an overview of the scientific knowledge of climate change impacting directly and indirectly on fisheries and aquaculture. Then using the relevant knowledge to deal with, to adapt to and to minimize the serious consequences caused by climate change on fisheries and aquaculture.

CNR510 Conflicts on Natural Resources 5(5-0)

This course provides students an overview of the various conflicts between the use / the management of natural resources. It begins with social welfare and human conflicts, including: growing population, the multiple laws, poverty and multilateral issues. Besides, this module will help the student know how to deal with the conflicts between the target of human being development and ecosystem development.

SDC511 Sustainable Aquaculture Development and Climate Change 5(5-0)

This course will help students better understand the theory and reality of the growing impact of sustainable aquaculture development on production growth and environmental management. It was inevitable to multidisciplinary approach and debate to clarify the influence of aquaculture to food security, poverty reduction, and rural people are easy to fall into economic risks in climate change. Improving biodiversity is a precondition for discussing about sustainable aquaculture development. At the same time, the students will better understand the interaction between aquaculture development and sustainable development, climate change and resource management. Comprehensive analyzing and evaluating of the sustainable aquaculture development includes: land-use management, aquaculture management and risk management will be resolved.

AEM514 Aquaculture Economics and Management 5(5-0)

The module provides students the selected issues related to economic management and aquaculture: production demand, aquaculture prices ... At the same time, it gives students the basic concepts of economics related to aquaculture: financial management, investment analysis and marketing applications in

aquaculture.

CME515 Economics and management of coastal area 5(5-0)

This course focuses on research into the use and management of coastal areas from economic perspective. The coastal areas are used for various purposes including fishing operations, aquaculture, entertainment, tourism, industrial development, etc. These operations create competition and conflict between fields, which requires the effective cooperation and interdisciplinary management. The course also provides the knowledge of economic perspectives and management of coastal areas for the learners in order to help them have ability to think, analyze and evaluate exactly in the importance of the integrated management of coastal areas. Besides studying studying theory, learners have to write individual essays and presentations, discusses and group works. The lectures will provide from basic concepts to important models and applications for learners.

ACE600 Master's thesis 15 credits

Master's thesis is a matter of science, management in agricultural economics, fishery, aquaculture, marine ecosystem and climate change and related faculties which are proposed by students, assigned by the University, agreed by instructors and approved by the council of faculties. The content of the essay includes review of domestic and foreign literatures, description of characteristics of studied objects, research context, theoretical development and practical application, appropriate choice of analytical methods, presentation of results, discuss and proposals.

5. Training organizing, test and evaluation, and graduation requirements:

Follow the regulation of master's degree training of Nha Trang University.

6. Teaching staffs:

No.	Course	Instructor
1.	Philosophy	Ph.D Nguyễn Trọng Thóc
2.	Introduction of Vietnamese culture	Ph.D Nguyễn Thị Ngân
3.	Research methodology	Assoc. Prof. Dr Ngô Đăng Nghĩa Assoc. Prof. Dr Nguyễn Thị Kim Anh PhD Lê Anh Tuấn
4.	Microeconomics	PhD Lê Kim Long PhD Phạm Thị Thanh Thủy
5.	Environmental economics	PhD Quách Thị Khánh Ngọc Assoc. Prof. Dr Nguyễn Thị Kim Anh
6.	Marine resourse economics and management	Prof. Claire Armstrong Prof. Ola Flaaten
7.	Ecosystem and marine biodiversity	Prof. Henrik Glenner Prof. Audrey Geffen Prof. Karin Pittman
8.	Wetland and aquatic and coastal habitat	PhD Pransiscu Baduge Terney

		Pradeep Kumara
9.	Marine management and marine spatial planning	Prof. Jahn Petter Johnsen
10.	Vulnerability and risk management in the context of climate change	PhD Akhmad Fauzi
11.	Fishing and aquaculture	PhD Lê Minh Hoàng PhD Phạm Quốc Hùng
12.	Conflict of natural resourses	Prof. Oscar Amarasinghe
13.	Stable development of aquaculture in the context of climate change	Prof. Curtis M. Jolly
14.	Aquaculture economics and management	Prof. Curtis M. Jolly Assoc. Prof. Dr Nguyễn Thị Kim Anh
15.	Coastal area economics and management	Prof. Ola Flaaten PhD Quách Thị Khánh Ngọc

7. Respnsible for the direction of research thesis

TT	Research	Giảng viên phụ trách Instructor
1.	Fisheries economics and management	Prof. Claire Amrstrong Prof. Ola Flaaten Assoc. Prof. Dr. Nguyễn Thị Kim Anh PhD Lê Kim Long

		PhD Phạm Thị Thanh Thủy PhD Quách Thị Khánh Ngọc PhD Akhmad Fauzi
2.	Aquaculture economics and management	Prof. Curtis M. Jolly Assoc. Pro. Dr Nguyễn Thị Kim Anh PhD Lê Anh Tuấn PhD Phạm Quốc Hùng PhD Lê Minh Hoàng
3.	Environemntal economics and management	Assoc. Pro. Dr.. Ngô Đăng Nghĩa PhD Quách Thị Khánh Ngọc PhD Lê Kim Long PhD Phạm Thị Thanh Thủy PhD Akhmad Fauzi
4.	Evaluattion in the impacts of climate change on marine ecosystem and adaptation strategies for clismate change	Prof. Claire Amrstrong Prof. Curtis M. Jolly PhD Akhmad Fauzi Assoc. Prof. Dr Nguyễn Thị Kim Anh PhD Quách Thị Khánh Ngọc Assoc. Prof. Dr Ngô Đăng Nghĩa Prof. Jahn Petter Johnsen

5.	Marine biodiversity and role in the economic life of community.	Prof. Claire Amrstrong Prof. Henrik Glenner Ph.DPhạm Thị Thanh Thủy Prof. Jahn Petter Johnsen Prof. Oscar Amarasinghe
6.	Ecaluation in the effectiveness of marine ecosystem-related economy and management.	Prof. Ola Flaaten PhD Lê Kim Long PhD Phạm Thị Thanh Thủy PhD Quách Thị Khánh Ngọc
7.	Policy-making to manage marine ecosystem	Prof. Jahn Petter Johnsen Prof. Oscar Amarasinghe PhD Pransiscu Baduge Terney Pradeep Kumara Assoc. Pro. Dr Nguyễn Thị Kim Anh
8.	Economics and ecosystem management of marine protected areas	Prof. Claire Amrstrong Prof. Ola Flaaten Assoc. Pro. Dr Nguyễn Thị Kim Anh PhD Quách Thị Khánh Ngọc PhD Phạm Thị Thanh Thủy

V. ENROLLMENT

1. Objects of enrollment

Besides the general demand following the regulations of master's degree

training of the Ministry of Education and Training, the learners need to meet the following conditions:

- a bachelor's degree in economics, management and business
- At least 2 years of work experience
- Skills of foreign language to use in studying: certificate B1, IELTS 5 band or above, or a bachelor's degree in English
- Not over the age of 35
- Good health to study
- Agreement of the direct management agency to be appointed to take the test
- Submission of enough files in time following the regulations of Nha Trang University

2. Procedure for enrollment:

- Following the regulations of training master's degree in circular No. 15/2014/TT-BGDĐT enforced by the Ministry of education and training
- Entrance examinations of Nha Trang University as for other training faculties of the University.

3. Target for enrollment:

20-30 students/ course, from the general training quota of Nha Trang University

4. Enrollment in the first course:

The first course will be done right after the project approved by the Ministry of Education and Training, expected in March 2015

5. Course syllabus:

COURSE SYLLABUS

1. Course information:

Tittle:	**Research Methodology**
Course code:	**GS501**
Credits:	2(2-0)
Course type:	Obligatory
Prerequisite:	Nil
Level:	Master
Instructor:	Ngo Dang Nghia, Le Anh Tuan, Nguyen Thi Kim Anh
Responsible Department:	Graduate Studies

2. Course description:

The course is about concepts related to science and scientific method, the steps in process of research from observing the phenomenon, rising question, building hypothesis, induce prediction and testing by experiment. The knowledge and skill of building a research project is included in the course and the technique to write a scientific paper is presented.

3. Course objectives:

1) Present and explain the concepts related to science, technology, scientific

methods, classify the different research methods.

2) Determine the topic and know how to build a research project.

4. Expected learning outcomes:

1) Carry out the steps properly in scientific methods

2) Writing the report/paper.

5. Course content:

No.	Topics	Total hours	
		Lecture	Discussion/assignment
1.	**General in science and Scientific method** - Basic Concepts - History of science - Steps in scientific methods	10	0
2.	**Building an research project** - Determine the problem - Overview -Building the hypothesis - Approach method - Design experiment - Sampling - Data anlysis	10	0

	- Publish		
3.	**Writing an report/paper** - Writing the Introduction, Methods, Results, Discussion and Conclusion - Expressing result in tables, graphs. - References	10	0

6. Course materials:

1) Ngo Dang Nghia (2014), Scientific Method, Course, Nha Trang University.

2) Kothari C.R. (2004), *Research Methodology,* New AGE International Publishers.

3) David Lindsay (1995), *"A Guide to Scientific Writing"*, Western University, Australia.

4) Day R.A. (1994), *How to write and publish a scientific paper*, Cambridge University Press.

7. Course assessment:

No.	Evaluation	Times	Percentage (%)
1	Mid – term exam	1	30
2	Final exam	1	70

Instructor:

Full name		Signature

Ngo Dang Nghia Le Anh Tuan Nguyen Thi Kim Anh	Asso. Professor PhD Asso. Professor	

COURSE SYLLABUS

1. Course information:

Tittle:	**Microeconomics**
Course code:	**ECM502**
Credits:	4(4-0)
Course type:	Obligatory
Prerequisite:	Nil
Level:	Master
Instructor:	Le Kim Long, Pham Thi Thanh Thuy
Responsible Department:	Graduate Studies

2. Course description:

The course is about: (i) Concepts and tools in analyzing microeconomics; (ii) Decision models of consumers, producers, and intervention of the government; (iii) Externalities and the invisible hands of the government to fix the failure of the market; (iv) Game theory and its application on competitive strategies.

3. Course objectives:

Provide students knowledge, skills to evaluate and analyze economics issues at advanced levels, to understand economic rules at developing countries.

4. Expected learning outcomes:

1) Students are able to discuss ecnomics issues.
2) Students are able to analyze and evaluate economic issues.
3) Students are able to use this course ad a source to study other subjects.

5. Course content:

No.	Topics	Total hours	
		Lecture	Discussion/assignment
1.	Marketing	4	0
2.	Conditions of budget constraints	4	0
3.	The theory of consumer interests.	4	0
4.	The theory of usefulness	4	0
5.	The theory of consumer choice	7	0
6.	Needs theory and Slutsky equation	5	0
7.	Theory of consumer surplus, and marketing demand	7	0
8.	The theory of marketing equilibrium	5	0
9.	The theory maximize profits and minimize costs	8	0
10.	Theory of cost curve, and the theory of providing businesses	4	0
11.	Theory of supplying industry and marketing	4	0

	monopoly		
12.	Externalities	4	0

6. Course materials:

1) Hal R. Varian. Intermediate Microeconomics: A Modern Approach.
2) Knut Sydsæter and Peter J. 2008. Hammond. Essential Mathematics for Economic Analysis. Prentice Hall.
3) Theodore C. Bergstrom and Hal R. Varian. Workouts in Intermediate Microeconomics.

7. Course assessment:

No.	**Evaluation**	**Times**	**Percentage** (%)
1	Mid – term test	1	30
2	Final exam	1	70

Instructor:

Full name		Signature
Le Kim Long Pham Thi Thanh Thuy	PhD PhD	

COURSE SYLLABUS

1. Course information:

Tittle: **Environmental Economics**

Course code:	**ENE503**
Credits:	3(3-0)
Course type:	Obligatory
Prerequisite:	Nil
Level:	Master
Instructor:	Quach Thi Khanh Ngoc, Nguyen Thi Kim Anh
Responsible Department:	Economics

2. Course description:

This course provides the topics related to the application of the welfare economic for natural resource and the environment issues. The topic of sustainable development, market failure, environmental pollution and environmental evaluation will be studied in this course.

3. Course objectives:

1) Provide knowledge of externalities and environmental pollution and the relationship between economic theory and instruments to control emissions, the cost-benefit analysis and environmental valuation.
2) To give students a thorough understanding basic tool of economics used to analyze environmental issues from the efficiency perspective.

4. Expected learning outcomes:

1) Analyse environment policy based on relevant theory.

5. Course content:

No.	Topics	Total hours	
		Lecture	Discussion/assignment
1.	Introduction to environment economics	4	0
2.	Market failure and environment	8	0
3.	Pollution control: targets and instruments	11	0
4.	Cost and benefit analysis	11	0
5.	Environment valuation	11	0

6. Course materials:

1) Perman, R., Y, Ma., J, McGilvray, and M, Common. 2005. Natural Resource and Environmental Economics, 3rd Edition.

2) Field, B. and Field, M. 2002. Environmental Economics: An Introduction. Boston, McGraw Hill.

3) Kolstad, C. 2004. Environmental Economics. OxfordUniversity Press.

7. Course assessment:

No.	Evaluation	Times	Percentage (%)
1	Requested seminar reports	1	30
2	Final exam	1	70

Instructor:

Full name		Signature
Quach Thi Khanh Ngoc Nguyen Thi Kim Anh	PhD Asso. Professor	

COURSE SYLLABUS

1. Course information:

Tittle:	**Marine Resource Economics and Management**
Course code:	**MEM504**
Credits:	5(5-0)
Course type:	Obligatory
Prerequisite:	Nil
Level:	Master
Instructor:	Prof. Claire Armstrong
Responsible	Fisheries Economics

Department:

2. Course description:

This course is about marine management, from an economic perspective. The focus will be on fisheries, but also other marine use will be presented, such as aquaculture and tourism, bioeconomic models, and their applications to different fisheries and management options. The course will also include aspects of valuation of marine environments in a broader sense.

3. Course objectives:

1) To give a broad understanding of marine management, from an economic perspective.
2) To obtain knowledge of the foundations of bioeconomic models

4. Expected learning outcomes:

1) Analyze and evaluation the economic rules of marine resources.
2) Analyze and evaluation the policies to manage marine resources present.
3) Develop management plans of marine resources.

5. Course content:

No.	Topics	Total hours	
		Lecture	Discussion/assignment

1.	Theories and practice of marine and resource economics and management	55	0
2.	Seminars		20

6. Course materials:

1) Armstrong, C.W. (2007). A note on the ecological-economic modeling of marine reserves. Ecological Economics 62, 242-250.

2) Beaumont, N.J., M.C. Austen, S.C. Mangi and M. Townsend (2008). Economic valuation for the conservation of marine biodiversity. Marine Pollution Bulletin 56, 386-396.

3) Flaaten, O. (2008), Lecture notes on Fisheries Economics and Management, University of Tromsø. Hannesson, R. 1998. Marine Reserves: What Would They Accomplish? Marine Resource Economics, 13, 159-170.

4) Hannesson, R. (2003): Aquaculture and fisheries. Marine Policy, 27, 169-178 Hartwick and Olewiler (1998). The Economics of Natural Resource Use. Chapter 5.

5) Johnston and Tyrrel (2005). A Dynamic model of sustainable tourism. Journal of Travel Research, 44,124-134.

7. Course assessment:

No.	Evaluation	Times	Percentage (%)
1	Mid – term paper	1	30
2	Final exam	1	70

Instructor:

Full name		Signature
Claire Armstrong	Professor	

COURSE SYLLABUS

1. Course information:

Tittle:	**Marine Biology and Biodiversity**
Course code:	**MBE505**
Credits:	5(5-0)
Course type:	Obligatory
Prerequisite:	Nil
Level:	Master
Instructor:	Prof. Henrik Glenner
Responsible Department:	Aquaculture

2. Course description:

The subject gives a basic introduction to Marine Biology and Biodiversity, emphasising on selected tropical and subtropical communities (e.g. interactions between marine plants and/or animals), organisms and habitats. The organisms will be described on the basis of their ecological

adaptations, and examples from different local geographical areas will be given.

3. Course objectives:

1) To give students a thorough understanding of marine biodiversity, including species composition.
2) To give students a thorough understanding structural relationships in different communities.

4. Expected learning outcomes:

1) Analyze levels of marine biodiversity in different areas.
2) Analyze the structural relationships of different communities.

5. Course content:

No.	Topics	Total hours	
		Lecture	Discussion/assignment
1.	Sounding the Deep	5	0
2.	The Oceanic Environment	6	0
3.	Ecological and Evolutionary Principles of Marine Biology	6	0
4.	The Chemical and Physical Environment	7	0
5.	Reproduction, Dispersal, and Migration	5	0
6.	Marine Vertebrates and Other Nekton	6	0

7.	Productivity, Food Webs, and Global Climate Change	5	0
8.	The Diversity of Benthic Marine Invertebrates	6	0
9.	The Tidelands Rocky Shores, Soft-Substratum Shores, Marshes, Mangroves, Estuaries, and Oyster Reefs	7	0
10.	Sea Grass Beds, Rocky Reefs, Kelp Forests, and Coral Reefs	6	0
11.	Biodiversity and Conservation of the Ocean	6	3
12.	Fisheries and Food from the Sea	6	2
13.	Environmental Impacts of Industrial Activities and Human Populations	4	0

6. Course materials:

1) Marine Biology (Function, Biodiversity, Ecology), Fourth Edition, Jeffrey S. Levinton. Oxford University Press. ISBN: 9780199857128.
2) Seminar notes and primary scientific literature .
3) Compendium.

7. Course assessment:

No.	Evaluation	Times	Percentage (%)
1	Requested seminar reports	2	20
2	Student presentation	1	10
3	Final exam	Oral	70

Instructor:

Full name		Signature
Henrik Glenner	Professor	

COURSE SYLLABUS

1. Course information:

Tittle:	**Coastal Habitats and Wetlands**
Course code:	**CHW506**
Credits:	3(3-0)
Course type:	Obligatory
Prerequisite:	Nil
Level:	Master
Instructor:	P.B. Terney Pradeep Kumara
Responsible Department:	Aquaculture

2. Course description:

This course is about different types of coastal habitats/wetlands, their functions, ecological services and functions, uses of and benefits derived, environmental and anthropogenic impacts, conservation and management of coastal habitats. The course includes lectures and field visits to major wetland sites. During the field visits students will learn the basic biology, ecology, functions and services of coastal ecosystems. Samples will be collected through standers sampling procedures and analyzed at the laboratories. Further, field activities include discussions, meetings with stakeholders; review of current management tools and with final feed back to the classroom in the form of presentations and reports.

3. Course objectives:

1) To provide the students with the biology and ecology of coastal ecosystems along with its functions and services
2) To understand the importance and threats of environmental and anthropogenic

4. Expected learning outcomes:

1) To understand the stakeholder ecosystem interactions, management tools available
2) To develop a management plan for a particular ecosystem concerned.

5. Course content:

No.	Topics	Total hours	
		Lecture	Discussion/assignment
1.	**Coastal ecosystems** Introduction Coral reefs Sea grass Lagoons and estuaries Mangroves Sand dunes Beaches and spits Algal beds	15	0

	Rocky beaches Current status and threats to coastal habitats Feedback seminar		
2.	**Field excurssions** Field work for each habitat specified	0	15
3.	**Management of coastal habitats** Climate change impacts on marine ecosystems/ resillence Management tools review Feedback and discussions Preparation of a management plan	15	0

6. Course materials:

1) IUCN. 2009. Mangroves for the future national strategy and action plan. An ecosystem-based integrated coastal management in Sri Lanka. Colombo, Sri Lanka.

2) National Science Foundation. 2000. Natural Resources of Sri Lanka; Conditions and Trends. National Science Foundation, Colombo, 302 p.

3) Olsen S. , D. Sadacharan, J. I. Samarakoon, A. T. White, H. J. M. Wickramaratne and M. S. Wijeratne (editors). 1992. Coastal 2000. Recommendations for a Resource Management Strategy for Sri Lanka's Coastal region, Volume I and II.CRC Technical Report No. 2033, CCD-CRMP Sri Lanka and Coastal Resource Centre, The University of Rhodes Island, 81+21 p

4) Ricke, K.L.,Orr, J.C., Schneider,and Caldeira,K, (2013). Risks to coral reefs from ocean carbonate

5) Mclead, E., (2013). *Ocean Acidification: The Next Big Threat to Coral Reefs?[*on line] Availble at: http://blog.nature.org/science/2013/05/20/ocean-acidification-the-next-big-threat-to-coral-reefs/.

6) Palmquist, D., (2013). *Can Mangroves Adapt to Rising Seas?* [on line] Available at: http://blog.nature.org/science/2013/08/08/mangrove-sea-level-rise-climate-change-adaptation/

7. Course assessment:

No.	Evaluation	Times	Percentage (%)
1	Mid – term exam	1	20
2	Seminars	2	10
3	Final exam	1	70

Instructor:

Full name		Signature
P.B. Terney Pradeep Kumara	PhD	

COURSE SYLLABUS

1. Course information:

Tittle:	**Marine Governance and Spatial Planning**
Course code:	**MGP507**
Credits:	3(3-0)
Course type:	Obligatory
Prerequisite:	Nil
Level:	Master
Instructor:	Prof. Jahn Petter Johnsen
Responsible Department:	Fisheries Economics

2. Course description:

The course is about how marine resources and coastal areas are governed. First, the course gives an historical overview of different theoretical perspectives on marine resource governance and the development of a variety of different management regimes and instruments. Second, the focus is on the challenges related to developing instruments that can cope with the complexity following from more ecosystem oriented approaches, climate change issues and broader societal concerns related to marine governance. As a consequence, marine governance is not only about the living resources, but also about the use of the whole marine space, from the seabed, via the water column, to the air above the surface. Parallel to the expansion in approach the goal and target oriented conventional

governance frameworks, become replaced by more plan- and process oriented frameworks that do not aim directly to specific goals, but that focus indicators, evaluation and response.

3. Course objectives:

1) To give an understanding of how marine resources and coastal areas are governed.
2) To give an historical overview of different theoretical perspectives on marine resource governance and the development of a variety of different management regimes and instruments.

4. Expected learning outcomes:

1) Analysis and evaluation the policies to manage marine resources present.
2) Develop strategies / policies on marine spatial planning, and management of marine resources.

5. Course content:

No.	Topics	Total hours	
		Lecture	Discussion/assignment
1.	Governace theory	20	5
2.	Planning theory	10	5
3.	Writing assignment under supervision	10	25

6. Course materials:

1) Berkes, F. (1998). Sacred Knowledge. Traditional Ecological Knowledge and Resource Management. Taylor and Francis. (Chapter 1 and 10).

2) Hardin, G. (1968). The Tragedy of the Commons. Science 162: 1243-1248.)

3) Hannesson, R. (2006). The privatization of the oceans: Cambridge: MIT press. Chap. 3 Property rights in fisheries (25p)

4) The Sunken Billions, The economic justification for fisheries reform, World Bank. (Chapter 1-5 (59p) http://siteresources.worldbank.org/EXTARD/Resources/336681-1224775570533/SunkenBillionsFinal.pdf

5) Jentoft, S.(2004) Institutions in fisheries: what they are, what they do and how they change. In Hersoug, B., S. Jentoft and P. Degnbol (2004) Fisheries Development: The Institutional Challenge. Delft: Eburon. P.205-228

6) Jentoft, S. (2005). Fisheries Co-management as Empowerment. Marine Policy 29(1) 1-7.

7) Johnsen, J.P. Is fisheries governance possible? Fish and Fisheries 2013 Pp.1-17

8) Ostrom, E. (1990). The Evolution of Institutions for Collective Actions. Cambridge. Chapter 1 Reflections on the Commons. Pp 1-28.

9) Part 2: Ecosystem Approach to Fisheries Management Toolbox http://www.fao.org/fishery/eaf-net/topic/166272/en

10) Marine Spatial Planning Guide, Unesco , A Step-by-Step Approach toward Ecosystem-basedManagement,http://www.unesco-ioc-marinesp.be/uploads/documentenbank/d87c0c421da4593fd93bbee1898e1d51.pdf

7. Course assessment:

No.	Evaluation	Times	Percentage (%)
1	Mid – term exam	1	30
2	Final exam	1	70

Instructor:

Full name		Signature
Jahn Petter Johnsen	Professor	

COURSE SYLLABUS

1. Course information:

Tittle:	**Risk and Vulnerability Management with Climate Change**
Course code:	**RMC508**
Credits:	3(3-0)
Course type:	Obligatory
Prerequisite:	Nil
Level:	Master
Instructor:	Akhmad Fauzi
Responsible Department:	Fisheries Economics

2. Course description:

This course is about climate change and its socio-economics. Particular attention will be given to study of risk management (enumerate risk related to climate change), and vulnerability assessment for coastal and fishery resources. In addition, some aspects of coastal communities social resilience in response to extreme events and climate change will also be discussed

3. Course objectives:

1) To provide a broad understanding of climate change and its socio-

economics.

2) To study of risk management (enumerate risk related to climate change), and vulnerability assessment for coastal and fishery resources.

4. Expected learning outcomes:

1) Analyze and evaluate the role and effectiveness of remedial measures and adapt to climate change now.
2) Evaluate the risks that may occur to the marine resources upon climate change.
3) Develop the risk management practices to cope with climate change.

5. Course content:

No.	Topics	Total hours	
		Lecture	Discussion/assignment
1.	Introduction to concept of vulnerability related to climate change	3	0
2.	Determinants of Risks: Exposure and Vulnerability	3	0
3.	Understanding the links between climate change and the risk	3	0
4.	Climate change impact on human system	3	0
5.	Introduction to benefit costs analysis	3	0
6.	Discounting and intertemporal aspects	3	0

7.	Risk and Uncertainty	4	0
8.	Group presentation 1	1	2
9.	Group presentation 2	1	2
10.	Group presentation 3	1	2
11.	Valuing the impact of climate change using revealed preference and stated preference	3	0
12.	Tools and Techniques for assessing risks related to climate change	4	4
13.	Case studies : Risk assessment to fisheries and coastal communities	3	0

6. Course materials:

1) IPCC. 2012. Managing the risks of extreme events and disasters to advance climate change adaption. Cambridge University Press.
2) Commonwealth Australia. 2006. Climate Change impacts and Risk Management. Government of Australia
3) Olmos, S. 2001. Vulnerbaility and adaptation to climate change: Concepts, Issues, Assessment Methods
4) Care, 2011 Understanding Vulnerability to climate change
5) IPCC. 2007. Climate Change 2007: Impacts, Adaptation and Vulnerability
6) Adger, W. Nell. Social Vulverability to Climate Change and extremes in coastal Vietnam. World Development 27(2) 249-269
7) Klein and Nicholas. 1999. Assessment of coastal vulnerability to climate change. Ambio 28(2): 182-187

7. Course assessment:

No.	Evaluation	Times	Percentage (%)
1	Mid – term exam	1	30
2	Final exam	1	70

Instructor:

Full name		Signature
Akhmad Fauzi	Ph.D	

COURSE SYLLABUS

1. Course information:

Tittle:	**Aquaculture and Fisheries**
Course code:	**AQF509**
Credits:	3(3-0)
Course type:	Obligatory
Prerequisite:	Nil
Level:	Master
Instructor:	Le Minh Hoang, Pham Quoc Hung
Responsible Department:	Aquaculture

2. Course description:

The subject provides an overview of climate change (CC) that impacts directly and indirectly on fisheries and aquaculture, serious consequences that caused by climate change on fisheries (F) and aquaculture (A).

3. Course objectives:

1) To give students an overview of climate change on aquaculture and fisheries.
2) To help students to analyze, explain, adapt and overcome climate change on fisheries and aquaculture.

4. Expected learning outcomes:

1) Analyze and evaluate the effect of climate change on fisheries and aquaculture.

2) Analyze, explain, adapt and overcome the serious consequences of climate change on fisheries and aquaculture.

5. Course content:

No.	Topics	Total hours	
		Lecture	Discussion/assignment
1.	Ecology and physics of CC on marine and inland fisheries - Main physics of marine and freshwater systems - Climate change on ecosystem and reproduction - Scenarios of climate change impacts on ecosystems	10	0
2.	Climate change on fisheries - Contributions of fisheries to food safety - Contributions of fisheries to livelihood and developed economic - Trends and current status of fisheries - Sensitivity of fisheries on CC - Influence of CC and recovered ability - Socio-economic context of fisheries	15	0

	- Fisheries and limitation of CC - Contributions of fisheries to greenhouse gas - Global limited activities on fisheries - Main impacts of CC on fisheries - Adaptation of fisheries to CC		
3.	Climate change on aquaculture - Directly impacts on aquaculture - Indirectly impacts on aquaculture - Social impacts of CC on aquaculture - Potential impacts of aquaculture on CC - Adapted solutions of aquaculture to CC	20	0

6. Course materials:

1) Nguyen, V.T., Nguyen, T.H., Tran, T., Pham, T.T.H., Nguyen, T.L., Vu, V.T. 2010. Climate change and impact in Vietnam. Institute of meteorological science and the environment. Publishers of scientific and technical – Hanoi. (in Vietnamese)

2) Barange, M.; Perry, R.I. 2009. Physical and ecological impacts of climate change relevant to marine and inland capture fisheries and aquaculture. In K. Cochrane, C. De Young, D. Soto and T. Bahri (eds). Climate change implications for fisheries and aquaculture: overview of current scientific knowledge. *FAO Fisheries and Aquaculture Technical Paper.* No. 530. Rome, FAO. pp. 7–106.

3) Daw, T.; Adger, W.N.; Brown, K.; Badjeck, M.-C. 2009. Climate change and capture fisheries: potential impacts, adaptation and mitigation. In K. Cochrane, C. De Young, D. Soto and T. Bahri (eds). Climate change

implications for fisheries and aquaculture: overview of current scientific knowledge. *FAO Fisheries and Aquaculture Technical Paper.* No. 530. Rome, FAO. pp.107-150.

4) De Silva, S.S. and Soto, D. 2009. Climate change and aquaculture: potential impacts, adaptation and mitigation. In K. Cochrane, C. De Young, D. Soto and T. Bahri (eds). Climate change implications for fisheries and aquaculture: overview of current scientific knowledge. *FAO Fisheries and Aquaculture Technical Paper*. No. 530. Rome, FAO. pp. 151-212.

7. Course assessment:

No.	Evaluation	Times	Percentage (%)
1	Requested seminar reports	1	30
2	Final exam	1	70

Instructor:

Full name		Signature
Le Minh Hoang	PhD	
Pham Quoc Hung	PhD	

COURSE SYLLABUS

1. Course information:

Tittle:	**Conflicts on Natural Resources**
Course code:	**CNR510**
Credits:	5(5-0)
Course type:	Elective
Prerequisite:	Nil
Level:	Master
Instructor:	Oscar Amrasinghe
Responsible Department:	Fisheries Economics

2. Course description:

The course about various conflicts that emerge among diverse stakeholders who are using/managing natural resources. It starts with a few introudctory lectures on human wellbeing and then probes into an array of causes that threaten wellbeing and generating conflcits. These include, among other things, Population growth, Plural Laws, Vulnerability and poverty, market failures (Externalities), common property, multi-stakeholder problems, etc. The course will also deliver a few lectures on diverse conflcit resolving mechansims. The final lectures of the course will address the clash between human development goals and ecosystem health goals and discuss the role of Interactive Governance in resolving this clash.

3. Course objectives:

1) To understand complexity of conflicts arising from the use of natural resources and the causes of such conflicts.
2) To study the impact of conflicts on human wellbeing.

4. Expected learning outcomes:

1) To study mechanisms of conflicts resolution adopted by diverse communities.
2) To understand governance arranegemnts that could be adaopted to cope with conflicts.

5. Course content:

No.	Topics	Total hours	
		Lecture	Discussion/assignment
1.	The Concept of Human Wellbeing What is wellbeing wellbeing? Social Conception of wellbeing Dimensions of wellbeing (material, relational an subjective, researching wellbeing)	15	0
2.	Definition and Causes of Conflicts	15	0
3.	Conflict Resolution	15	0
4.	Non-Extractive Values of Natural Resources	15	0

5.	Addressing the Clash Between Human Development Goals and Ecosystem Health Goals.	15	0

6. Course materials:

1) Allison, E. H., and F. Ellis. (2001);The livelihoods approach and management of small-scale fisheries. *Marine Policy 25,* (5):377-388.

2) Amarasinghe, O. and Bavinck, M. (2011) Building resilience: Fisheries cooperatives in southern Sri Lanka. In: S. Jentoft and A. Eide (eds.*) Poverty Mosaics: Realities and Prospects in Small-scale Fisheries*. Dordrecht, The Netherlands: Springer, pp. 383–406.

3) Bavinck, M., R. Chuenpagdee, M. Diallo, P. van der Heijden, J. Kooiman, R. Mahon and S. Williams. (2005); *Interactive fisheries governance – A guide to better practice.* Delft: Eburon Academic Publishers.

4) Bavinck, M., Lorennzo Pellegrini & Erik Mostert. (2014); *Conflicts over Natural Resources in the Global South*. CRC Press, Taylor & Francis Group, London, UK, 204 p.

5) Borrini-Feyerabend, G., Farvar, M. T., Nguinguiri, J. C. & Ndangang, V. A. (2000): *Co-management of Natural Resources: Organising, Negotiating and Learning-by-Doing.* GTZ and IUCN, Kasparek Verlag, Heidelberg (Germany).

6) www.buzzle.com/articles/thomas-malthus-theory-of-population.html

7) www.en.wikipedia.org/wiki/**Demographic_transition**

7. Course assessment:

No.	Evaluation	Times	Percentage (%)
1	Mid – term exam	1	20

2	Seminars	2	10
3	Final exam	1	70

Instructor:

Full name		Signature
Oscar Amrasinghe	Professor	

COURSE SYLLABUS

1. Course information:

Tittle:	**Sustainable Aquaculture Development and Climate Change**
Course code:	**SDC511**
Credits:	5(5-0)
Course type:	Elective
Prerequisite:	Nil
Level:	Master
Instructor:	Curtis M. Jolly
Responsible Department:	Aquaculture

2. Course description:

The course is about growing impact of sustainable aquaculture on production growth and environmental management. The course adopts a multi-disciplinary approach and brings to light the debate on aquaculture contribution to food security, poverty alleviation, rural livelihoods, economic vulnerability and landscape management in the light of climate change. Improving biodiversity as a prerequisite for sustainable aquaculture is one of the key points discussed. The net benefits of sustainable aquaculture production on environmental and landscape changes are evaluated. The focus will be on aquaculture and the aquatic environment but the effects of climate change on the alteration of

aquaculture contribution to sustainable economic growth will be examined, evaluations of mitigation and adaptation measures to implement sustainable aquaculture development while efforts to conserve the landscape and aquatic environment with climate change are examined, interactions between aquaculture development, sustainability, climatic change and resource management.

3. Course objectives:

1) To understand the impact of aquaculture in the context of climate change on the environment, production and social life of the people.
2) To understand the analysis methods and comprehensive evaluation the development of sustainable aquaculture.

4. Expected learning outcomes:

1) Analysis the impact of climate change on the sustainability of aquaculture.
2) Analysis and comprehensive evaluation the aquaculture development for sustainable aquaculture

5. Course content:

No.	Topics	Total hours	
		Lecture	Discussion/assignment
1.	Introduction on the importance of aquaculture to economic development	5	1
2.	The effects of aquaculture on poverty alleviation;	5	2

3.	Sustainable aquaculture; Measuring the contribution of small-scale aquaculture: an assessment.	6	2
4.	New technologies and aquaculture sustainability;	5	2
5.	Climate change fish production and aquaculture sustainability;	5	0
6.	Climate change implications for fisheries and aquaculture; Climate change implications for aquaculture	4	1
7.	The effects of mitigation of climate change on aquaculture risks	5	0
8.	Cost Benefit analysis on mitigation measures;	4	2
9.	Cost effectiveness analysis of mitigation measures to minimize the effects of climate change on aquaculture	5	1
10.	Aquaculture, climate change and food security	4	1
11.	Aquaculture, climate change and vulnerability	4	1
12.	Aquaculture and food production	5	0
13.	Aquaculture and human health	5	0

6. Course materials:

1) Brander, K. M. 2007. Global fish production and climate change, Proceedings of the National Academy of Science, USA, 104, 19709-19714.

2) Cai, J**.** C. Jolly, N. Hishamunda, N. Ridler, C. Ligeon & P. Leung. 2012. Review on aquaculture's contribution to socio-economic development:

enabling policies, legal framework and partnership for improved benefits; In R. P. Subasinghe, J.R. Arthur, D. M. Bailey, S. S. De Silva, M. Halmart, N. Hishamunda, C.V. Mohan & P. Sorgelos, eds. Farming the Waters for People and Food. Proceedings of the Global Conference on Aquaculture. 2010, Phuket, Thailand. 22-25 September 2010. Pp. 265-302. FAO, Rome and NACA, Bankok.

3) Cochrane, K., C De Young, D. Soto, T. Bahri, 209.Climate change implications for fisheries and aquaculture: overview of scientific knowledge; FAO Fisheries and Aquaculture, Technical Paper 530.

4) Hishamunda, N, J. Cai & L. PingSun. 2009. Commercial aquaculture and economic growth, poverty alleviation and food security; FAO Fisheries and Technical Paper. 512. FAO, Rome.

5) Jolly, C.M., Umali-Maceina, G. & Hishamunda, N. 2009. Small-scale aquaculture: a fantasy or economic opportunity. In Bondad-Reantaso, M.G. and Prein, M. (eds). Measuring the contribution of small-scale aquaculture: an assessment. FAO Fisheries and Aquaculture Technical Paper. No. 534. Rome, FAO. pp. 87-100.

6) Lewis D. 1997. Rethinking aquaculture for resource-poor farmers: perspectives from Bangladesh; Food Policy. Vol. 22. No.6:533-546.

7) Subasinghe,R. P. J.R. Arthur, D. M. Bailey, S. S. De Silva, M. Halmart, N. Hishamunda, C.V. Mohan & P. Sorgelos, eds.2012. Farming the Waters for People and Food. Proceedings of the Global Conference on Aquaculture, Phuket, Thailand. 22-25 September 2010. Pp. 265-302. FAO, Rome and NACA, Bankok.

8) Wurts, W. A. 2000. Sustainable Aquaculture in the twenty-first century, Reviews in Fisheries Science, 8(2): 141-150.

7. Course assessment:

No.	Evaluation	Times	Percentage (%)
1	Mid – term exam	1	30
2	Final exam	1	70

Instructor:

Full name		Signature
Curtis M. Jolly	Professor	

COURSE SYLLABUS

1. Course information:

Tittle:	**Aquaculture Economics and Management**
Course code:	**AEM514**
Credits:	5(5-0)
Course type:	Elective
Prerequisite:	Nil
Level:	Master
Instructor:	Curtis M. Jolly, Nguyen Thi Kim Anh
Responsible Department:	Fisheries Economics

2. Course description:

This course covers selected topics in the aquaculture economics and management: production demand, aquaculture price,... It also gives basic concepts economy related to aquaculture: financial management,

investment analysis and marketing applications in aquaculture.

3. Course objectives:

1) Understand the issues related toaquaculture economics and management.
2) Understand the fundamentals of investment analysis and product marketing of aquaculture industry.

4. Expected outcomes for students:

1) Apply the principles of economics and business businesses in aquaculture.

5. Course details:

No.	Topics	Total hours	
		Lecture	Discussion/assignment
1.	Introduction Importance of Aquaculture World Fish Production Growth of Aquaculture Consumption and Demand of Fish	9	0
2.	Aquaculture Production	9	0
3.	Demand and Price	11	0
4.	Marketing in Fisheries and Aquaculture	12	0
5.	Aquaculture Management	9	0

6.	Analyzing Aquaculture Planning and Policy	10	0
7.	Practical Applications	15	0

6. Course materials:

1) Anderson, Lee G. 1986, The Economics of Fisheries Management, Baltimore: Johns Hopkins University Press.
2) Bjorndal, Trond, 1990, The Economics of Salmon Aquaculture, Boston: 3 Blackwell Scientific Publications.
3) Curtis M. Jolly and Howard A. Clonts. 1993. Economics of Aquaculture. Food Products Press. (J&C)
4) Other readings will be assigned for selected topics.

7. Course evaluation:

No.	Evaluation	Times	Percentage (%)
1	Mid-term test	1	30
2	Group Discussions and Participation	1	20
3	Final exam	1	50

Instructor:

Full name		Signature
Curtis M. Jolly	Professor	

Nguyen Thi Kim Anh	Associate professor	

COURSE SYLLABUS

1. Course information:

Tittle:	**Coastal Zone Management and Economics**
Course code:	**CME515**
Credits:	5(5-0)
Course type:	Elective
Prerequisite:	Nil
Level:	Master
Instructor:	Ola Flaaten, Quach Thi Khanh Ngoc
Responsible Department:	Fisheries Economics

2. Course description:

This course focuses on the use and management of the coastal zone (CZ) from an economic perspective. CZs are used for many purposes, such as fisheries, aquaculture, recreation, tourism, industrial development and waste depositing. In most cases such uses have developed both competitively and through cooperation and management. When discussing CZ management from an economic point of view, we build on economic analyses in the fields of microeconomics, fisheries, aquaculture, environment, development and tourism. In addition to economic concepts material, some material from other social sciences and natural sciences will be used.

The teaching will consist of lectures, individual essays and presentations,

seminars and group work. Lectures will be on a selected range of key economic concepts, models and applications.

3. Course objectives:

1) To provide tools for analysing CZ development, competitively and cooperatively, when the resources are limited and have competing ends. Further the aim is to nurture the students' capacity for critical thinking about the importance of integrated CZ management.

4. Expected learning outcomes:

1) Students can get insight into the theoretical and practical challenges of CZ management.

5. Course content:

No.	Topics	Total hours	
		Lecture	Discussion/assignment
1.	Welfare economics	10	0
2.	Valuing the coastal zone environment	12	2
3.	Cost – benefit	10	3
4.	Marine protected areas (MPAs)	10	2
5.	Integrated coastal zone management (ICZM)	14	2
6.	Coastal resources and poverty	8	2

6. Course materials:

1) Perman, R., Y, Ma., J, McGilvray, and M, Common. 2005. Natural Resource and Environmental Economics, 3rd Edition.

2) Kim Anh Thi Nguyen and Ola Flaaten (2011). A Mekong Vietnamese small-scale fishing community, In Svein Jentoft and Arne Eide (Eds.) Poverty Mosaics - Realities and Prospects in Small-Scale Fisheries, pp.335-357. Springer, Berlin.

3) Reithe, S., C. Armstrong and O. Flaaten (2011). The economics of MPAs revisited. Manuscript, September 2011, The Norwegian College of Fisheries Science, University of Tromsø.

4) Bene, C., B. Hersoug & E.H. Allison. 2010. Not by rent alone: Analysing the pro-poor functions of small-scale fisheries in developing countries. Development Policy Review, 28, pp. 325-358.

5) Flaaten, O. (2010). Fisheries rent creation and distribution – the imaginary case of Codland. *Marine Policy* 34:1268-1272.)

6) Ngoc, Q.T.K. and O. Flaaten (2010). Protected areas for conflict resolution and management of recreational and commercial fisheries. *Marine Resource Economics* 25: 409-426.

7. Course assessment:

No.	Evaluation	Times	Percentage (%)
1	Seminar	2	30
2	Final exam	1	70

Instructor:

Full name		Signature

Ola Flaaten Quach Thi Khanh Ngoc	Professor PhD	

COURSE SYLLABUS

1. Course information:

Tittle: **Introduction to Vietnamese culture**

Course code: **VIE513**

Credits: 4 (4-0)

Prerequisite:	Elective course
Level:	Master students
Instructor:	Nguyen Thi Ngan
Responsible Department:	Graduate Department

2. Course description:

This Introduction to Vietnamese Culture course will provide you the opportunity to explore Vietnam's rich history of regional and cultural traditions as well as its contemporary society. It is designed to helpyou learn about and understand the culture and society of Vietnam encompassing its past and present. Students will have opportunities to experience the origins and civilizations of Vietnam; the evolution of Vietnamese culture; and the emergence of civil society in contemporary Vietnam. Topics to be examinedare (and not limited to) Vietnamese people and language, history and institutions, thought and religion, ethnic diversity, education, literature, cuisine; family, rituals, festivals and leisure activities, and performing arts.

Through lectures, discussions, guest speaker interviews, mini research projects and presentations, students will be exposed to authentic contents of Vietnamese culture and society.In addition, the course will include excursions to local historic and cultural sites, thus students will have the opportunity to further engage Vietnamese culture and to interact with local people. Students will gather authentic materials from their traveling sites, interact with local peoples, and observe religious rituals and festivals for discussions and assignments for the course.

3. Course objectives:

1) The purpose of the course is to help students gain insights about Vietnamese culture, people, traditions as well as its contemporary society thereby understanding themselves and their place in the world. Knowledge of other culture can help students achieve greater success in encounters with collaborators from other countries and cultures. Research and writing assignments will assist students in improving their research and writing skills which can be directly applied in their studies.

4. Expected learning outcomes:

1) Understand the origins of the Vietnamese people and its civilization.
2) Analyze foreign influences in Vietnamese people and culture.
3) Examine the evolution of the Vietnamese culture and its cultural core.
4) Examine the construction of Vietnamese historical cultural identity.
5) Discuss the dynamics of the Vietnamese family.
6) Understand the cultural significance and uniqueness of three regions: North, Central, South.
7) Examine the religious rich mixture of Buddhism, Taoism, Confucianism, Catholicism, in Vietnamese daily activities, festivals, and rituals.
8) Examine cultural practices of particular Vietnamese ethic minority groups.
9) Identify urban culture trends and popular culture in contemporary Vietnam.
10) Learn to appreciate societal, cultural and sub-cultural diversity and an interest in things and ways of life of the Vietnamese people.

5. Course content:

No.	Topic	Total hours	
		Lecture	Discussion/assignment
1.	Session 1: Land, People, and Language	4	8
2.	Session 2: History and Institutions	4	4
3.	Session 3: Thought and Religion	4	4
4.	Session 4: Literature, Art and Architecture	3	4
5.	Session 5: Education	2	2
6.	Session 6: Cuisine	2	2
7.	Session 7: Family and Gender	2	2
8.	Session 8: Rituals and Festivals	2	2
9.	Session 9: Performing Arts	2	2
10.	Session 10: Themes in contemporary Vietnamese society	3	4

6. Course materials:

1) Nguyen Thi Dieu and Mark W.Mc Leod (2007), *Culture and Customs of Vietnam.*

2) Nguyen Van Huyen (2013), *The Civilization of Vietnam.*

3) Neil Jamieson, *Understanding Vietnam*.

4) D.R. SarDesai, *Vietnam: Past and Present (4th Ed.)*

5) Robert Templer, *Shadows and Wind: A view of Modern VietNam.*

7. Course assessment:

No.	Evaluation	Times	Percentage (%)
1	Writing assignment	1	30
2	Final exam	1	70

Instructor:

Full name		Signature
Nguyen Thi Ngan	PhD	

VI. TRAINING CAPACITY

1. Brief introduction of Nha Trang University

Nha Trang University was found on August 01, 1959 as the Fisheries Faculty of Hanoi Institute of Agriculture and Forestry. Following the Decision No. 155-CP of the Prime Minister issued on August 16th 1966, the Faculty was separated and changed into the School of Fisheries. Currently, Nha Trang University is considered as a undergraduate and graduate facility that has a standing tradition with 54 years of history and 39 years placed in Khanh Hoa province. Nha Trang University has educated and supported an important human resource in science and technology, socio-economic management for the region. It has significant contribution for the development of the South central and Western Highlands as well as for Vietnamese Fisheries.

The mission of Nha Trang University is training human resources with high education, scientific research, technology transference, and technical services, particularly fisheries and aquaculture as our strength. That meets the demand of economic and social development.

The vision to 2030 of Nha Trang University is becoming a multi-disciplined application-oriented university among universities ranked highly in Southeast Asia, stepping up to become a research-oriented university.

With 24 hectares of campus area, the main facility of Nha Trang University is located on one of the most beautiful place on the shore of Nha Trang bay. It also is an important cultural and scientific place of Nha Trang city as well as of Khanh Hoa Province.

It now has 14 faculties, training institutes, 4 institutes and research-technology transference center, and 14 units of management and training service.

With 498 teaching staffs including 8 Assoc. Pro.s, 101 PhD.s, more than 300 Masters (within 78 masters are domestic and abroad fellows). There are

over 60 percents of Ph.D.s who were trained in developing countries (America, Japan, France, Russia, Norway, Australia, South Korea, …), over 50 percents of abroad trained masters. At present, there are 160 domestic and abroad fellows and post-graduate students. Nha Trang University is aiming to have 30% of faculties with doctoral degrees by 2015 to offer teaching quality to the students.

Nha Trang University was recorgnized as one of 20 universities gaining sustandard quality of training human resources with high level by national monitoring council, which meets demand of society.

Nha Trang University is training 5 majors for doctoral degrees, 10 majors for master's degrees, 28 majors for bachelor degrees, and 15 majors for college degrees. Regular students flow of school: nearly 100 foreign post-graduate students, more than 1,000 post-graduate students, more than 13,000 full-time students in Nha Trang and over 10,000 in-service students at 18 linked centers in whole country. Over past 54 years of establishment and development, the University has so far trained 63 PhD.s, 1214 masters, over 30,000 engineers, university bachelors and 7,000 college bachelors.

Nha Trang University currently is cooperating in training and research with nearly 60 other Universities and Institutes fron 17 countries, territories and non-governmental organizations around the world.

Nha Trang University (Fisheries University formerly) is one of the first and the leader in training argriculture and fisheries in Vietnam. It has gray matter potential with experienced teaching staffs and researchers in fisheries economic management and climate change.

There are a large number of teaching staffs working in the field of agricultural-fishery economy and environment. And these fields are very close to a speciality of marine ecosystem management and climate change.

Besides post-graduate training combined programs in science and environmental technology, Nha Trang University has actively participated in the research programs of maritime economy and climate change of the Ministry of

Science and Technology management. Beside the domestic research programs, the scientific staffs of Nha Trang University also tried to exchange short courses with advanced universities in the world and sent the young ones on a refresher course abroad with scholarship granted by foreign countries. However, the spontaneous, small and intermittent training causes difficulties in implementation and lack of focus.

In particular, the University was allowed by the Ministry of Education and Training to cooperate with the Tromso University, Norway in training master of economics, speciality of fisheries economics and management from 2007 to 2013. There were 4 courses and 67 students awarded degrees, in which more than 1/3 of foreign ones from some countries such as China , Sri Lanka, Nepal, Laos, Cambodia, Peru,…

Nha Trang University was awarded the Labor Medal, Third Class, Second Class, and Independence Medal, Third Class, Second Class and First Class. In 2006, the university was awarded the title of Hero of Labor.

2. Faculty of Economics:

Faculty of Economics was established in 1982 originating from the Department of Aquaculture Economics with the purpose of training staff in the field of Aquaculture. At the beginning, this Faculty had only three Departments including only a specialized training as Aquaculture Economics. After many changes in the organization, the Faculty of Economics at present has 5 departments: Economics, Aquaculture Economics, Business Management, Tourism Management, Business and Trading.

The lecturers of the Faculty have been increasing in the numbers as well as the quality. The total number of official lecturers in the faculty is 58 people including 01 assistant professor, 20 doctors, 32 masters, 14 lecturers doing as researchers (including 8 researchers participating the research programs in the United States, Norway and France) and 6 faculties learning master's degree.

The Faculty undertakes training university level in 5 majors: Agriculture

Economics, Business Administration, Business Trading, Travel & Tourism Management, Information System Management, and training master degree in Agricultural Economics (formerly Aquaculture Economics) and Business Administration.

The Faculty has extensive experience in training professionals in Agriculture and Aquaculture Economics at university level and master degree. At the university level, the Faculty has trained Agricultural Economics (formerly Aquaculture Economics) since 1979, over 26 courses up to now. At the master level, the Faculty has trained Aquaculture Economics (now Agricultural Economics) since 2004 (according to Approval No. 414 / QĐ-BGD&ĐT-ĐH&SĐH Day 20/01/2004- Ministry of Education and Training) over 8 courses with 94 graduates up to now. Particularly, from 2007 to 2013, the Faculty was allowed to organize master training of Economics with Tromso University of Norway in the field of Aquaculture Economics and Management with 4 courses and gave 67 certificates for students including more than one third of them coming from China, Sri Lanka, Nepal, Laos, Cambodia, Peru, ...

Faculty's scientific research has developed recent years. Many plans have been made, and they practically contributed to the effective management of the economy, improved the quality of teaching and scientific research of lecturers and students.

International cooperation of the Faculty has been going up recently. International relationships with universities around the world are maintained and developed. Therefore, faculties and students have more opportunities to get updated knowledge and improve professional skills in teaching and scientific research. At present, the Faculty is working with many universities including the University of Tromso - Norway, University of Ohio - USA, University of Arizona - USA, University of New Caledonia - France, Georges Mason University –USA, University of Auvergne - Clermont Ferrand 1.

Beside the potential partners who have brought many benefits and

changes for the faculty in education, training, research and developing the human resources, the faculty is also in the first steps of establishing and promoting the information exchanging, cooperated researching and training with other partners below:

- The Council of Aquaculture Research of Norway. (Cooperation Research)
- The APN organization (Cooperation Research)
- The Shang Hai University, China; Ruhuna Srilanka University; Chittagong Bangladesh University (Cooperation in post graduated education NOMA – FAME)
- IIFET organization: The convention of economy and IIFET was held successfully on the July, 2008 by the faculty and the whole University.
- EAERE organization.

3. Lectuers/researchers involved in the program:

3.1. Lecturers/researchers of NTU:

Including lecturers and scientists of Economic Faculty and other faculties, institutes in the University having enough English abilities in teaching:

Order	Names, DOB, position, faculty	Academic Position,	Academic Achievement, Country, Year of graduation	Major	The Number of Research Papers and Journals

1.	Nguyễn Thị Kim Anh, 1963, Faculty of Economics	Assistant Professor	Ph.D, Vietnam, 2003	Aquaculture Economics	14 Research Papers and 50 Journals
2.	Lê Minh Hoàng, 1980, Aquaculture Institutes	Lecturer	Ph.D, Korea, 2010	Aquaculture	3 Research Papers and 28 Journals
3.	Phạm Quốc Hùng, 1974, Dean, Aquaculture Institutes	Lecturer	Ph.D, Vietnam, 2010	Aquaculture	3 Research Papers and 21 Journals
4.	Lê Kim Long, 1974, Vice Dean, Faculty of Economics	Lecturer	Ph.D, Norway, 2009	Economic Resources	10 Journals
5.	Ngô Đăng Nghĩa, 1960, Dean, Biology and Environment Technology Institutes	Assistant Professor	Ph.D, Vietnam, 2000	Biotechnology	6 Research Papers and 6 Journals

6.	Quách Thị Khánh Ngọc, 1977, Faculty of Economics	Lecturer	Ph.D, Norway, 2010	Economic Resources	9 Journals
7.	Phạm Thị Thanh Thủy, 1981, Faculty of Economics	Lecturer	Ph.D, Norway, 2013	Economic Resources	3 Research Papers and 7 Journals
8.	Lê Anh Tuấn, 1966, Aquaculture Institutes	Lecturer	Ph.D, Vietnam, 2008	Aquaculture	10 Research Papers and 13 Journals
9.	Nguyễn Thị Ngân, 1977, Deputy Head of International Relation Affairs	Lecturer	Ph.D, America, 2012	Linguistics	

3.2. Lecturers/researchers in other international universities:

Order	Names, DOB, position, faculty	Academic Position,	Academic Achievement, Country, Year of graduation	Major	The Number of Research Papers and Journals

1.	Claire Armstrong, 1964, NCFS, Tromso University, Norway	Professor	PhD, Norway, 1997	Resource economis	More than 10 projetcs, 10 published papers
2.	Ola Flaaten, 1947, NCFS, Tromso University, Norway	Professor	PhD, Norway, 1991	Resource economis	More than 10 projetcs, 10 published papers
3.	Jahn Peter Johnsen, 1961, NCFS, Tromso University, Norway	Assoc Prof	PhD, Norway, 2003	Marine social science	More than 10 projetcs, 10 published papers
4.	Oscar Amarasinghe, 1950, Agricultural Faculty, Ruhuna University, Sri Lanka	Professor	PhD, Belgium, 1988	Environmental economics, agricultural economics	More than 10 projetcs, 10 published papers
5.	Henrik Glenner, 1970, Ecology Institute, Bergen University, Norway	Professor	PhD, Copenhagen, 1998	Động vật học	More than 10 projetcs, 10 published papers

6.	Curtis M. Jolly, Agricultural economics and social science faculty, Auburn University, USA	Professor	PhD, USA,	agricultural economics	More than 10 projetcs, 10 published papers
9.	Akhmad Fauzi, 1962, Head of Graduate program, Economics and Management Faculty, Bogor Agricultural University, Indonesia	Instructor	PhD, Canada, 1998	Environmental and resource economics	More than 10 projetcs, 10 published papers
10.	Pransisa Baduge Terney Pradeep Kumara, 1969, Marine and Fisheries technology and social science faculty, Ruhuna University, Sri Lanka	Instructor	PhD, Sweeden, 2008	Environmental economics, agricultural economics	More than 10 projetcs, 10 published papers

I. PLANNED EXPENDITURE

Most of the amount of expenditure used to conduct the project is sponsored by Norhed, and the rest of the expenditure is extracted from the tuition fees of the learners.

1. Scholarship:

- The Norhed project provides full scholarship (used in paying for the whole course) for six learners of each course, and the candidates are chosen from the results in the required examinations and during their study process.

- Norhed project sponsors the expenditure by using 80% left in the amount of fund for the learners.

2. Fees:

The learners who are not in the criteria of receving scholarship have to pay fee according to the requirement fee of Vietnamese program (popular program) of Nhatrang University.

II. CONCLUSION:

From the analysis above, it can be concluded that the program uses English language to train the post graduate level of Managing the sea ecology and climate changing of Nhatrang University with the participation of some other internation universities like Tromso University, Bergen University, Norway University, Ruhuna University of Srilanka. The Norhed project has a potential future, and it can meet the demand of longitude study of nation. It can also bring a lot of benefits, or save a big amount of national budget, and ensure the rules of nation about training post graduate level.

Therefore, I would propose the acceptance of the MOET for the opening the training program used English language: **the Master of Agricultural Economics, and this course will provide deep research on the managing sea ecology and climate changing of Nhatrang University**.