

INTERNATIONAL OCEAN INSTITUTE

Meeting of Courses Development Committee
on
5 September, 1993
at
United Nations University, Tokyo

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	PAGE
Item 1. Laying down the procedure by which courses and modules are approved	2
. Appendix L of UNDP PRODOC - Annex A	3
. Consultative Meeting - Annex B	5
Item 2. Selecting pedagogical experts (to be trained) in each Centre	10
Item 3. Consideration of course structures proposed by the Headquarters and Centres in the context of the overall needs of IOI	11
. Small islands course - Annex 1	12
. Policy Makers course - Annex 2	25
. Advanced course - Annex 3	27
. Managers Ent. course - Annex 4	33
C.V. of C. Venkatachalan	38

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Page 1

AGENDA

- Item 1. Laying down the procedure by which courses and modules are approved (Appendix L of UNDP PRODOC)
- Item 2. Selecting pedagogical experts (to be trained) in each Centre
- Item 3. Consideration of course structures proposed by the Headquarters and Centres in the context of the overall needs of IOI
- Item 4. Any other matters

Agenda Note - Procedure for Approving Courses and Modules

- 1.1 The UNDP project provides for a processing system for course development and modules production (Appendix L of document, attached as Annex A). The system needs to be elaborated, guidelines laid down and a procedure established.
- 1.2 In this connection attention is drawn to a very systematic treatment of the subject which was elaborated at the recent consultative meeting on training held recently in Sardinia (Annex B). It needs to be examined as to whether the system elaborated in the paper can be:
- adopted in toto
 - adopted after adapting it to the needs of IOI

In the case of adaptation, in what manner and time schedule should it be adapted.

1. It is absolutely essential to ensure that the courses and modules produced by each operating centre are of the highest quality and meet IOI standards. The Courses Development Committee would consist of the following persons:
 1. Professor E.M. Borgese Chairman
 2. Executive Director, IOI Member
 3. Centre Directors/Vice Chancellors Members
 4. UNDP Representative Member
 5. Pedagogical Expert Member
 6. Subject matter specialists
(drawn up from a pool of experts) Members
2. The meeting of the Course Development Committee could be held twice annually to coincide with the meeting of Directors/Vice Chancellors. This would save on travel costs.
3. The processing system would be as follows:
 - the course structure would be approved by the Course Development Committee so that it becomes a standard course structure which can be used by all the Centres. This approval would have to be in the context of the overall needs of IOI
 - the Committee would also, after consideration of the pedagogical expert's opinion, lay down the standards to be met by the course modules to be developed
 - proposals of the centres for developing new courses (including course modules) would in their outline form be circulated to the subject matter specialists for their comments
 - the Committee would lay down the procedure by which the approved courses (including modules) are tested, verified and revised
 - the Committee after it is satisfied about the quality of the course would certify it as an IOI course

4. The pedagogical expert to be contracted by IOI is Mr. Venkatachalam of the National Institute of Port Management, Madras, who is a course developer in TRAINMAR. Mr. Venkatachalam has been highly recommended by Mr. Michel Couroux, Principal Advisor on HRD and Training with UNCTAD.
5. Mr. Venkatachalam will work in tandem with a pedagogical expert in IIT Madras and who will later on be the IOI expert to similarly train pedagogical experts in Fiji, Dakar and Colombia. This expert would be Prof. V.S Raju whose CV is at pages 143-144.
6. The approximate costs of the pedagogical development would be as under:
 - costs of Mr. Venkatachalam/IOI Madras course developer 8 weeks (40 days) at US\$ 200 per day

US\$ 8,000
 - DSA for three trips to Fiji, Dakar and Colombia (2 weeks each = 45 days) at US\$ 150 per day by the pedagogical expert

US\$ 6,750
 - travel costs at US\$ 5000 per trip (x3)

US\$ 15,000
 - travel costs of pedagogical expert to attend 4 sessions of the Course Development Committee (at US\$ 3000 per trip)

US\$ 12,000

TOTAL US\$ 41,750

7. The rest of the money would be used for trips of subject matter specialists (where necessary) and of headquarters staff to centres to oversee testing and validation of courses.
8. The 5 course developers (1 in HQ and 4 in the Centres) would be asked to attend training courses in course development methodology. Funds for their travel and DSA etc. would come from funds earmarked for the training of trainers.

**CONSULTATIVE MEETING ON TRAINING IN INTEGRATED
MANAGEMENT OF COASTAL AND MARINE AREAS FOR
SUSTAINABLE DEVELOPMENT**

**Outline of the presentation to be made by:
M. Couroux, Principal Adviser on HRD and Training, UNCTAD**

***THE USE OF A SYSTEMATIC APPROACH FOR THE DESIGN
AND PRODUCTION OF TRAINING MATERIAL***

1. Introduction
2. The role of the instructor
3. The environment
4. A systematic approach to training development
5. Design and production of training modules
6. Evaluation of training programmes
7. Advantages of using the above approach in technical assistance training projects
8. The TRAIN-X network

1. INTRODUCTION

Time has past when all training activities were based almost only on the subject matter knowledge and communication capacity of the instructor.

Now people generally agree that high quality training relies upon three main elements:

- The course curriculum and training material
- the instructor
- the environment within which the training is organized.

This paper aims at presenting a systematic approach to training development through which high quality training material can be prepared and disseminated in an international environment.

The paper will first examine the role of the instructor and it will explain how the training environment may influence the quality of training.

Secondly, the systematic approach will be introduced.

Thirdly, the paper will present how such a systematic approach to training development can be applied in an international cooperation context.

2. THE ROLE OF THE INSTRUCTOR

He should be convinced that "*how students learn*" is just as important as "*what they learn*".

He should see his role as a "facilitator" who identifies what trainees should do to achieve their objectives and guide them towards their achievement.

He should be able to make the best use of the material which is at his disposal, contribute to evaluate it, and to up-date it as required.

Of course the instructor should be able to:

- master the subject matter;
- behave as a model for students (generating enthusiasm for the subject and for the course);
- use as required modern training media and techniques;
- evaluate trainees problems and provide guidance to solve them.

3. THE ENVIRONMENT

To create proper environment for training means that:

The "*right trainee*" will attend the "*right training*" at the "*right time*".

In other words, if you have a good training material and competent instructors but that the trainees who attend the course have not been properly selected or if there is no guarantee that they will apply the acquired skills after having completed the course, we can say that the training is not taking place in the proper environment.

In other words training development is part of human resources development.

Training should be part of a human resource development policy which includes:

- manpower planning
- selection-recruitment
- training
- career development

Proper training environment means that a training policy has been prepared and that it states in particular:

- Who is responsible for:
 - . evaluating training needs
 - . developing training programmes and material
 - . delivering training
 - . evaluating training results
- The relations between the "*training system*" and the "*client system*".

4. A SYSTEMATIC APPROACH TO TRAINING DEVELOPMENT

To develop high quality training a systematic approach including the following three steps is required:

- analysis
- development
- evaluation

This approach is generally subdivided into the following 9 phases applied by the programmes CODEVTEL (ITU), TRAINMAR - TRAINFORTRADE (UNCTAD) and TRAINAIR (ICAO):

1. PRELIMINARY ANALYSIS
2. JOB/TASK ANALYSIS

3. POPULATION ANALYSIS
4. CURRICULUM DEVELOPMENT
5. MODULES DESIGN
6. PRODUCTION
7. VALIDATION/REVISION
8. IMPLEMENTATION
9. EVALUATION

5. DESIGN AND PRODUCTION OF TRAINING MODULES

Taking into account the training objectives and financial constraints, the main decisions to be made and actions to be completed are as following:

- a) Define a training strategy
 - Will the training course/module be under the form of:
 - . individualized training
 - . group training
 - Will the training course/module be:
 - . instructor dependant
 - . material dependant
- b) Make a selection of media and training techniques which will reflect the training strategy and take into account financial constraints.
- c) Process to the design of modules which include the development of:
 - mastery tests
 - practical exercises
 - guidelines and materials for the trainee
 - A/V material and/or CBT material
 - Instructor guideline and material
- d) TRY OUT, VALIDATE and REVISE as required the training material until it is ready for implementation.

6. EVALUATION OF TRAINING PROGRAMMES

The following levels of evaluation are considered:

- | | |
|----------|-----------------------|
| Level 1: | TRAINEES REACTIONS |
| Level 2: | MASTERY TESTS |
| Level 3: | JOB PERFORMANCE LEVEL |
| Level 4: | OPERATIONAL LEVEL |

7. ADVANTAGES OF USING THE ABOVE APPROACH IN TECHNICAL ASSISTANCE TRAINING PROJECTS

- The use of a systematic approach based on quality standards is particularly useful in large technical assistance programmes based on the decentralized production of training material, the training of trainers and the dissemination of training through a cooperative network of training institutions.

8. THE TRAIN-X NETWORK

- The experience acquired by ITU, ICAO, UNCTAD and UNDP.
- The applicability of the approach to different sectors and different levels of training including management level.
- The training of course developers, instructors and HRD and training managers.
- Prospects for an interagency cooperation in HRD and training in the context of technical cooperation for the benefit of developing countries.

Agenda Note - Selecting pedagogical experts

The processing system for courses development requires the services of a pedagogical expert who has experience in the development of curriculum design and courses. Initially external expertise would be necessary but thereafter the expertise should be internalised within the IOI and, if possible, decentralised to every centre. Ways of achieving this may be discussed.

Agenda Note - Consideration of Course Structures

- 3.1 The Headquarters is submitting the following course structures:-
- (i) a course with focus on small islands - 8 weeks (Annex 1)
 - (ii) a course for policy makers - 1 week (Annex 2)
 - (iii) an advanced course - 4 weeks (Annex 3)
 - (iv) a course for managers of the Enterprise - 5 weeks (Annex 4)
- 3.2 The other centres (Madras and Fiji) will submit their course structures, if any, during the meeting.
- 3.3 The Committee may like to consider the course structures submitted and approved them with such amendments as the Committee considers necessary.

Introduction to Syllabus

It is a truism to say that the world is in transition. Growing global interdependence, increased interactions between institutions and individuals, exponentially growing technology and new directions in the processes of development are some of the overriding characteristics of the last decade of this century.

In the marine sector, scientific and technological advances have triggered off political and legal change processes culminating in three major developments: (i) the adoption of the U.N. Convention of the Law of the Sea in 1982; (ii) the World Commission on Environment and Development (the Brundtland Commission) 1987; and (iii) the United Nations Conference on Environment and Development (U.N.C.E.D.) in Rio de Janeiro in 1992.

These have basically transformed the uses of the oceans and increased the salience of marine affairs on both national and international agendas. The development of oceanography as a multi-disciplinary scientific activity has greatly added to the knowledge sector while the penetration of the latest phase of the industrial revolution into the oceans has added a new dimension to national growth strategies. At the same time, the Law of the Sea Convention, signed by 159 States and now ratified by 54, may come into force next year. This Convention, if properly implemented and utilized, could constitute one of the building blocks of a new international order, including a new international economic order.

The Brundtland Commission laid stress on sustainable development and the need for bridging the technology gap between North and South. The United Nations Conference on Environment and Development (UNCED), adopted a Declaration, two important Conventions, and a detailed plan of action for sustainable development during the next century, "Agenda 21." This agenda contains an important chapter on marine and coastal activities, thus linking the UNCLOS and the UNCED processes, and sustainable development of ocean space and resources with sustainable development on land. In view of the fundamental importance of the world ocean, in its interaction with the atmosphere, for possible climate change, possibly accompanied by sea-level rise, this linkage is unbreakable.

UNCED has begun to exercise its influence on a wider process of restructuring the 50-year old United Nations system: In accordance with the decisions taken at Rio, the 47th General Assembly created a whole new sector to deal with Sustainable Development, including sustainable development in the oceans.

The large dimensions and special characteristics of the oceans has led to the emergence of new concepts: "integrated ocean and coastal zone management", economic theories synthesising growth dynamics with environmental considerations, theories of organisation articulating concepts like organic structures and matrix systems. All this requires a new type of civil servant, and a new type of manager or scientist, capable of interfacing the social sciences with the natural sciences, of law with science and technology, of economics with ecology, of managerial structures with processing systems. Only then can she/he be able to manage the ongoing high-tech revolution, the environment, and multi-cultural human resources.

This is especially true of island states supporting as they do small communities. Since small island states cannot maintain all necessary specialists training has to be aimed at producing cadres of managers or scientists, engineers and coastal planners able to integrate the many variables that go into integrated coastal management.

It is in this context that this programme has been designed with the emphasis on the felt needs of island developing countries. The programme is so organised as to give participants an overview of the many and varied aspects of ocean and coastal management and to familiarize them with the broad range of issues encountered in the marine area in the sphere of diplomacy, law, science, technology, economics and management. Particular emphasis is given to the importance of regional cooperation and development in this broad context. The evolution of regional systems, such as the Regional Seas Programme and South Pacific Regional Environmental Programme (SPREP), will play a crucial role in ocean governance for sustainable development.

SYNOPSIS

- Week 1: The International Setting.
- Week 2: Managerial Implications, Information Requirements.
- Week 3: Management of Coastal Zone Resources - Living.
- Week 4: Management of Coastal Zone Resources - Nonliving.
- Week 5: Coastal Zone Activities and Economics.
- Week 6: Policy Making and Project Formulation.
- Week 7: Risk Management.
- Week 8: Practical Exercise.

WEEK 1: THE INTERNATIONAL SETTINGMonday.

- Session I: Opening Ceremony
- Session II: Introduction to the course, training methodology, expected outputs, administrative arrangements.
- Session III: The changing international order: technological, economic, political.
- Session IV: New foci, perceptions and expectations of the international community. Islands in the new world order: vulnerabilities and opportunities.

Tuesday.

- Session I & II: Introduction to the law of the sea. New concepts, analysis of new provisions; spaces created by the Convention; territorial sea, contiguous zone, exclusive economic zone, archipelagic waters, the regime of islands.
- Session III & IV: Convention on the Law of the Sea: international ocean space, the high seas, marine scientific research, protection of the marine environment.

Wednesday.

- Convention on the Law of the Sea - contd.
- Session I: Technology, its development and transfer. New concepts of codevelopment of technology, technology fusion etc.
- Session II: Regional and subregional considerations: Arts. 276 and 277 - their implementation. Meditech and Technocaribe.
- Session III & IV: Workshop I: the emerging new world order; issues arising in the technological, managerial and economic domains.

Thursday.

- Session I: UNCED and its links to UNCLOS. Chapter 17 of Agenda 21 and its programmatic content.
- Session II: The Commission on Sustainable Development and supporting measures. Changes necessary in regional and national institutions.

- Session III: The longterm implications of UNCED. Sustainability as a process: resources, society and culture.
- Session IV: Application to Islands: measures necessary: technological, economic, instiutional.
- Friday.
- Session I: Economic sustainability: public goods and externalities; environmental economics.
- Session II: Costs of pollution and how to internalise; sustainable human consumption
- Session III & IV: Workshop I: continued.

WEEK 2: MANAGERIAL IMPLICATIONS, INFORMATION REQUIREMENTS

Monday.

- Session I: Managerial implications of extended national zones. Needs for harmonising land use with sea use, natural sciences with the social sciences and of resolving conflicts of multiple-uses.
- Session II: Information requirements for management: An overview: the intersection of demographic, economic, geographical and natural scientific parameters.
- Session III: Oceanography and its importance. The impact of advancing technology - electronics, remote sensing, new materials, genetics; the changing research vessel.
- Session IV: Oceanography for developing countries: the software dimension, data collection, collation and dissemination. Economics of data collection and assessment.

Tuesday.

- Session I: Geophysical oceanography; plate tectonics; vulcanism and metallogenesis. Inshore oceanography: currents, waves, tides. Coastal erosion and sediment transportation.
- Session II: Ocean air interface: meteorology and its importance for African countries.

Session III & IV: Chemistry of sea-water: isotope oceanography, age and rate of sedimentation. Chemical oceanography and the chemistry of pollution. How to measure, control and reduce pollutants from the oceans. Environmental oceanography.

Wednesday.

Session I: Biodiversity: threats, causes of extinction, need to conserve. Management tools and case studies.

Session II: Cooperation with competent international organisations in marine science and technology.

Session III & IV: Workshop II: knowledge acquisition and its use; problems facing developing countries.

Thursday.

Session I: Land use competition: locational concepts: economic and social, agriculture, extractive industry, manufacturing industry, residential, touristic, historical/archeological.

Session II: Sea use competition: fishing, aquaculture, tourism/sport, shipping, offshore oil and gas, mining for placers & sands.

Session III: Coastal area management: planning and siting techniques. EEZ management: problems of multiple-uses, conflicts and surveillance.

Session IV: Interlinking and interfacing of coastal area management and EEZ management. Systems analytical approach to ocean management.

Friday.

Session I: Investment appraisal methods: the private sector. Return on investment, pay-back period, discounted cash flow, internal rate of return.

Session II: Investment appraisal methods: the public sector. Nonlinearities, multiple objectives, shadow prices.

Session III & IV: Workshop III: management of science and technology with reference to the coastal zone.

WEEK 3: MANAGEMENT OF COASTAL ZONE RESOURCES-LIVINGMonday.

- Session I: Management and conservation of living resources: fisheries biology and population dynamics.
- Session II: Stock assessment techniques: traditional methods, computer models.
- Session III: Management strategies; restricted entrance; mesh size control; restricted areas and seasons.
- Session IV: Effectiveness and deficiencies of existing management systems; participation of fishing communities. Traditional forms of management and conservation.

Tuesday.

- Session I & II: Fisheries technology: detection; capture technology; post harvest; processing; waste recycling; marketing.
- Session III: Effect and impact of flora on the coastal ecosystem. Role of mangroves and other coastal plants.
- Session IV: Case study: management of coral reefs and/or mangroves (coral reefs on the East African Coast).

Wednesday.

- Session I: The fishing industry: employment and output of the fishing industry; management of the fish population; species composition; fisherman's cooperatives and unions; conservation.
- Session II: Fisheries economics: integration into development strategy; contribution to GNP.
- Session III & IV: Workshop IV: management of living resources: biological, technological, economic considerations.

Thursday.

- Session I: Aquaculture and mariculture: Post-World War II developments; FAO Kyoto Conference.

Session II: Aquatic plants; fish, mullusc and crustacean farming; sea ranching; genetic engineering of aquatic plants and of fish.

Session III: Aquaculture development through remote sensing techniques and sattelite imageries.

Session IV: Monitoring and surveillane in the EEZ. Foreign fishing fleets and their impacts: economic, ecological, political. Access and joint venture agreements.

Friday.

Session I & II: Workshop on Coastal Zone Resources. Presentation of three papers and discussion.

Session III & IV: Field trip to the Senegal Ocean Institute.

WEEK 4: MANAGEMENT OF COASTAL ZONE RESOURCES- NONLIVING

Monday.

Session I: The farming of fin fish: cage culture, sea ranching; fish behaviour conditioning; genetic engineering of fish; implications for the future.

Session II: Artisanal fisheries and the impact of technological developments. Indigenous systems environmental viability, women in traditional artisanal fisheries.

Session III & IV: Establishing legal regimes for management of resources: environmental impact legislation, legislation to regulate activities in the coastal zone and the EEZ.

Tuesday.

Session I & II: Mining: resource exploitation and sustainable development; oil and gas; gravel, sand and near shore minerals; minerals of the deepsea bed.

Session III & IV: Mining (cont): mining technology; environmental implications of sea-mining; toxicity, coastal erosion and other hazards associated with mining.

Wednesday.

Session I &
II: Offshore oil and gas: prospecting methods,
drilling techniques, exploitation methods.

Session III &
IV: Workshop V: Management of marine resources:
legal considerations.

Thursday.

Session I &
II: Principles of management and planning:
management strategies; integrated coastal
management: the need, techniques, economics.

Session III &
IV: Financial planning; project preparation;
institutional and human resource requirements
for coastal management.

Friday.

All Day: Field visits: reverse osmosis plant, a tourist
complex, a port.

WEEK 5: COASTAL ZONE ACTIVITIES AND ECONOMICS

Monday.

Session I: Criteria for measuring economic development:
Gross Domestic Product and Gross National
Product; deficiencies of GNP; use of social
indicators; vulnerability indicators.

Session II: The Human Development Index: the sub-indices of
the HDI; education; health; income
distribution; HDI scores for typical African
economies.

Session III &
IV: Characteristics of island economies: small
size; diseconomies of scale; high degree of
openness; over dependence on trade; narrow
range of exports; insularity, remoteness and
transport costs; special problems of atolls and
archipelagos.

Tuesday.

Session I: Tourism and island economies: over dependence
on tourism; impact on the environment; effect

on culture; use of coastal space, sustainable tourism; eco-tourism and cultural tourism.

- Session II: Economics of tourism: multipliers; demand; competitiveness; development of new products.
- Session III: Shipping developments: technological developments; globalised door to door transport; containerization and multimodal transport; tanker traffic and safety regulations; free-ports, shiprepair and shipbuilding industries.
- Session IV: Sea ports: main ports and feeder lines; regional cooperation; management of sea ports; port regulation; port dues and revenues; traffic control; and land-sea interface.

Wednesday.

- Session I: Desalination technologies to meet fresh water demands.
- Session II: Energy from the sea: OTEC, wave, tidal.
- Session III & IV: Workshop VI: management of ocean resources - links with the overall economic planning.

Thursday.

- Session I & II: Technological developments: the electronics and communications revolutions, remote sensing, their impacts on CZM.
- Session III & IV: Coastal engineering: harbour and port design, preventing coastal erosion and flooding from the sea, ensuring unpolluted water for brackish water aquaculture, outfalls from thermal power plants, waste water discharge etc.

Friday.

- Session I & II: Coastal engineering (contd.)
- Session III & IV: Workshop VII: the engineering dimension in managing ocean resources - managerial, economic and technological considerations.

WEEK 6: POLICY MAKING AND PROJECT FORMULATIONMonday.

Session I: Policy analysis: the multivariate nature of the oceans, the need for multi-level analysis and planning, coordination at both horizontal and vertical levels, need for interagency harmonization.

Session II: Foreign internal policy; national, state and local policy; need of integration.

Session III & IV: Integrated policy-making: its parameters; problems of harmonising different policies, tools and methods of arriving at a correct policy-mix.

Tuesday.

All Day: Simulation exercise in making policy for an island.

Wednesday.

All Day: Simulation exercise (contd.)

Thursday.

All Day: Coastal zone management in the Maltese islands: human impact on the island ecosystem with special reference to the coastal zone; land-use competition in the coastal zone; planning and environmental management - a historical review; recent developments - integrated planning for sustainable development.

Friday.

Morning: Field Visits.

Afternoon: Coastal zone management in the Maltese islands (contd.)

WEEK 7: RISK MANAGEMENTMonday.

Session I & II: Environmental risk management: need, types, techniques. Components of risk management strategy: risk identification, estimation,

evaluation; risk profiles and contingency plans; economic considerations (cost-benefit and risk-benefit analyses). Regional, national and local responses.

Session III & IV: Case studies and discussion.

Tuesday.

Session I: Natural hazards: floods, tsunamis, storm surges, hurricanes, tornadoes, seismic activities, soil and shoreline erosion.

Session II: Interaction between natural and man-made hazards. Environmental Impact Assessments. Concepts and the management of such hazards.

Session III: The Intergovernmental Panel on Climate Change; Scientific findings, model predictions and uncertainties.

Session IV: Sea level rise and coastal zone management: multiple vulnerability and sensitivity profiles.

Wednesday.

Session I & II: Review of major contamination risks, including major spills and chronic pollution. Environmental impact of marine contaminants. Contingency planning and management of resources.

Session III & IV: Workshop VIII: methods of tackling and minimising risks.

Thursday.

Session I: Emerging technologies development and management: risks and uncertainties.

Session II: Methods of tackling uncertainty and risks

Session III: Project Management: preparation and management in conditions of uncertainty and methods of minimising risk.

Session IV: Financial management and capital budgeting for risks and uncertain projects.

Friday.

All Day: Designing a Coastal Resources Management Programme for selected Participant countries
- issue definition and analysis

WEEK 8: PRACTICAL EXERCISE

Monday.

Designing a Coastal Resources Management Programme for selected participant countries.

Session I & II:- issue definition and analysis

Session III: - setting objectives

Session IV: - preparing a policy paper

Tuesday.

All Day: Designing a Coastal Resources Management Programme (contd.)

- selecting resource management strategies

- designing methods of getting public input and support

Wednesday.

All Day: Designing a Coastal Resources Management Programme (contd.)

- designing an organisational strategy for implementing work plan

- preparing projects in the fields of:

- . fisheries
- . tourism
- . transport etc.

Thursday.

All Day: Designing a Coastal Resources Management Programme (contd.)

- writing workplan (s)

- general seminar with faculty to critically examine workplan and policies

Friday.

Closing Ceremony.

09.00 - 10.30 Session I
10.30 - 10.45 Tea break
10.45 - 12.15 Session II
12.15 - 14.00 Lunch
14.00 - 15.30 Session III
15.30 - 15.45 Tea break
15.45 - 17.15 Session IV

Monday:

Session I Changing international scene: technological, economic, political

Session II Growing salience of ocean matters on the international agenda. UNCLOS III (1973-82), Brundtland Commission (1987), UNCED (1992): historical development and links between them

Session III Managerial and policy implications of Convention on the Law of the Sea: extended jurisdictions, legal and surveillance implications

Session IV Economic and resource implications of new Law of the Sea

Tuesday:

Session I New Industrial Revolution: emerging technologies, the marine technology matrix.

Session II Implications of extended jurisdictions and new technologies for science and technology policy: technology development, technology co-development, systems configuration, technology fusion

Session III Emerging technologies management with special reference to marine technology

Session IV Oceanography and advancing technology: emerging research vessels, changing methods of data collection, collation and dissemination.

Wednesday:

Session I Information requirements of policy makers and decision-makers: demographic, economic, geographical and natural scientific parameters

- Session II Coastal area management and exclusive economic zone management: their interlinkages and interfacing
- Session III The engineering dimension: outfalls from power plants, waste water discharge, prevention of coastal erosion
- Session IV Energy from the sea: OTEC, wave, tidal

Thursday:

- Session I The new economics of the environment: sustainability, renewable resources, service economy
- Session II Policy analysis: the multivariate nature of the oceans, the need for multi-level analysis and planning, coordination at both horizontal and vertical levels, need for interagency harmonization
- Session III Foreign and internal policy; national state and local policy; their integration; problems and prospects
- Session IV Harmonising of different policies, tools and methods of arriving at a correct policy-mix

Friday:

- Sessions I & II Workshop: Drawing up a framework of an ocean-policy and management framework integrating the legal, scientific, technological, financial and economic parameters (group work)
- Sessions III & IV Review of programme with the faculty

Advanced 4 Week Course on Ocean Management:
coastal zone and exclusive economic zone management

Week 1

Monday:

- Session I: Introduction to course and expected outputs
- Session II: Systems analytical approach to ocean management: the interpenetration and interfacing of the social and natural marine systems.
- Session III: Growing salience of ocean matters on the international agenda. UNCLOS III (1973-82), Brundtland Commission (1987), UNCED (1992): historical development and links between them.
- Session IV: UNCED and its programmatic content. Importance of ocean management.

Tuesday:

- Session I: Managerial and policy implications of Convention on the Law of the Sea: extended jurisdictions, legal and surveillance implications.
- Session II: Economic and resource implications of extended jurisdictions.
- Session III: Knowledge of ocean environment: the scientific dimension - remote sensing, oceanographic vessels, floating platforms.
- Session IV: The integration and systematisation of data; conversion of data into management information; electronics and computerisation.

Wednesday:

- Session I: New Industrial Revolution: emerging technologies, the marine technology matrix.
- Session II: Emerging technologies management with special reference to marine technology.
- Session III & IV: Workshop I: implications of UNLoS and UNCED for planning and management: regionally and nationally.

Thursday:

- Session I: Implications of extended jurisdictions and new technologies for science and technology policy: technology development, technology co-development, systems configuration, technology fusion.
- Session II: Information requirements of policy makers and decision-makers: demographic, economic, geographical and natural scientific parameters.
- Session III: Knowledge of the social environment: the legal framework for resource management and preservation
- Session IV: Knowledge of the social environment: the macro economic and political strategies and their interaction with ocean management.

Friday:

- Session I: Traditional marine use systems: artisanal fisheries and related activities, tenure systems etc; equity dimensions of technological change.
- Session II: Coastal area management and exclusive economic zone management: their interlinkages and interfacing.
- Session III & IV: Workshop II: science and technology (including high tech) and equity implications for traditional uses.

Week IIMonday:

- Session I: Sea use structure and its four interacting elements, namely, set of uses; set of relationship between uses; set of physical, chemical, biological elements; set of relationship between sea uses and natural elements.
- Session II: Set of uses: resource related (living, nonliving), recreational and aesthetic, land-related; relationships between uses.

Session III: Implications of multiple use in a 4-dimensional and fluid environment; conflicts and synergy.

Session IV: Need for integrated policy making - problems and prospects; techniques, economics

Tuesday:

Session I: Regional governance: case study on the Mediterranean.

Session II: Regional centres for science and technology: Arts 276 and 277 of the law of the sea.

Session III: Ecosystem management techniques: definition of ecosystem, knowledge and skills necessary, tools and techniques for managing complex systems.

Session IV: The engineering dimension: energy from the oceans, outfalls and discharges, desalination techniques.

Wednesday:

Session I: Financial planning and project preparation

Session II: Institutional and human resource requirements for ocean management

Session III & IV: Workshop III: parameters of ocean management; trade offs and synergy requirement.

Thursday:

Session I: Policy analysis: the multivariate nature of the oceans, the need for multi-level analysis and planning, coordination at both horizontal and vertical levels, need for interagency harmonization

Session II: Harmonising of different policies, tools and methods for arriving at a correct policy-mix

Session III: The new economics of the environment: sustainability, renewable resources, service economy

Session IV: Costs of pollution and how to internalise; sustainable human consumption

Friday:

- Session I: Investment appraisal methods: the private sector. Return on investment, pay-back period, discounted cash flow, internal rate of return
- Session II: Investment appraisal methods: the public sector. Nonlinearities, multiple objectives, shadow prices
- Session III & IV: Workshop IV: parameters of ocean policy, linkages and multiple objectives.

Week 3Monday:

- Session I: Environmental risk management: need, types, techniques
- Session II: Components of risk management strategy: risk identification, estimation, evaluation; risk profiles and contingency plans; regional, national and local responses
- Session III: Interaction between natural and man-made hazards; environmental impact assessments; management of such hazards
- Session IV: Sea level rise and coastal zone management; multiple vulnerability and sensitivity profiles

Tuesday:

- Session I: Effects of storms, cyclones and such disasters, causes and mitigation; protection of coasts.
- Session II: Ocean-air interface. Meteorology and its importance.
- Session III: Shallow water effects, inshore oceanography, sediment transport.
- Session IV: Measures to counteract coastal erosion; structures for arresting erosion, its side effects.

Wednesday:

- Session I: Aquaculture development through remote sensing and satellite imagery.

Session II: Genetic engineering of marine organisms; likely side-effects.

Session III & IV: Workshop V: risk management and vulnerabilities of islands, issues arising therefrom.

Thursday:

Session I & II: Integrated ocean policy: case studies USA, Netherlands, India, Sri Lanka, Japan.

Session III & IV: Simulation exercise in ocean policy formulation.

Friday:

All Day: Simulation exercise: continued.

Week 4

Monday:

Designing a Ocean Management Programme for a selected participant country and a regional programme of cooperation.

Session I & II:- issue definition and analysis

Session III: - setting objectives

Session IV: - preparing a policy paper

Tuesday.

All Day: Designing a Ocean Management Programme.
- selecting strategies
- designing methods of public/country participation

Wednesday.

All Day: Designing a Ocean Management Programme.
- designing an organisational strategy for implementing work plan

- preparing projects some fields e.g.: science and technology, surveillance, fisheries etc.

Thursday.

All Day: Designing a Ocean Management Programme.

- writing workplan (s)
- general seminar with faculty to critically examine workplans both national and regional

Friday.

Closing Ceremony.

DRAFT SYLLABUS

TRAINING PROGRAMME FOR MANAGERS, POLICY AND PROJECT PLANNERS FOR THE ENTERPRISE OF THE INTERNATIONAL SEA-BED AUTHORITY, UPON THE COMING INTO FORCE OF THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA

WEEK 1

Locturer: Dr. Joseph Warinoba

Monday, October 4, 1993

Introduction to the Law of the Sea. Events leading up to UNCLOS III. Main issues. Organisation of Conference. Redistribution of ocean space.

Tuesday, October 5

Part XII. Environmental Issues, and link with UNCED. Parts XIII and XIV, Marine Scientific Research and Development and Transfer of Technology. Part XI: The Common Heritage of Mankind. The International Sea-bed Authority (ISA). The Enterprise. The Sea-bed Disputes Chamber of the International Tribunal for the Law of the Sea.

Wednesday, October 6

Commission on the Limits of the Continental Shelf (Annex II). Conditions for Prospecting, Exploration, and Exploitation (Annex III). Financial Terms of Contract.

Thursday, October 7

The Enterprise. Its statute (Annex IV), system of governance, links with the ISA; finances, operating systems; transfer/acquisition of technology; legal status, immunities

Friday, October 8

Workshop I. Alternative operating models of the Enterprise in the context of N-S, E-W cooperation (group work).

WEEK 2

Guest Lecturer: Dr. Luis Preval

Monday, October 11

Establishment of the Preparatory Commission. Resolutions I and II. the Arusha Understanding. The Registration of the Pioneer Investors. The Obligations of the Pioneer Investors

Tuesday, October 12

Work of Special Commissions I, II, III & IV. "Assumptions" Metals demand forecasting. Land-based production and ocean mining. Ocean mining in the broad context of international equity.

Wednesday, October 13

The first mine site for the Enterprise. Location; geo-morphology; resources: Manganese nodules; other resources; marine environment. The Pioneer joint programme for exploration of the first mine site of the Enterprise. Analysis of technologies to be employed.

Thursday, October 14

Development of deep-sea mining technology: Exploration; lifting; transportation, and processing systems: 1983-93. 3 to 7 metal recoveries. Case studies (to be prepared by participants)

- China
- France
- India
- Japan
- Russia
- Germany, Norway, Finland, USA

Friday, October 15

Workshop II: Alternative technology acquisition options for the Enterprise (group work). Project Planning.

WEEK 3

Guest lecturer: Dr. Krishan Saigal

Monday, October 18

The economics of sea-bed mining. Changing perspectives: the MIT study; the Australian study; the French and Norwegian studies. Role of the private sector; role of the public sector. Investment appraisals.

Tuesday, October 19

The Management of uncertainty. Financial, economic environmental, and technological uncertainties.

Wednesday, October 20

Project funding. Suppliers credit, flotation of bonds, etc. Leverage and its implications. Capital budgeting for a state-of-the-art project.

Speaker: Dr. Krishan Saigal

Preparation of project profiles in conditions of uncertainty. Methods of

futurecasting, links with technology acquisition strategies. Technology fusion as opposed to technology development.

Thursday, October 21

Research and Development. Funding alternatives. Systems configuration and development. Systems for selecting and managing projects. Flexible, adaptive organisations. Matrix system. High-tech project management.

Friday, October 22

Workshop III. Development of a financial and economic profile for the Enterprise (group work)

WEEK 4

Guest lecturers: Dr. Hans Amann; Dr. Alejandro Nadal

Monday, October 25

Environmental impacts of sea-bed mining. Studies by the University of Kiel and Thetis & Co.

Tuesday, October 26

Joint ventures. Equity, contract, management and service types. The Secretariat paper. The German Paper. The Austrian Paper (JEFERAD); the Columbian Paper (The International Enterprise). Advantages of joint ventures with pioneer investors. Joint technology development and environmental assessment. The Thetis paper. Japanese, European, US systems. Security and sustainability.

Wednesday, October 27

Intellectual property rights in joint ventures in R&D. The AALCC paper.

Thursday, October 28

Sea-bed mining technology: spin-off benefits for the development and management of the nonliving resources of the EEZ

Friday, October 29

Workshop IV. Development of an integrated five-year project for joint technology development and environmental impact (exploration; development of human resources; technology development; environmental impact; cost; economic feasibility).

WEEK 5

Monday, November 1

Tuesday, November 2

Workshop IV continued

Wednesday, November 3

Thursday, November 4

Individual research and report writing on topics to be selected by participants in consultation with the Director.

Friday, November 5

Final presentation and closing ceremony.

Saturday, November 6:

Departure.

DALHOUSIE UNIVERSITY ARCHIVES DIGITAL SEPARATION SHEET

Separation Date: July 21, 2016

Fonds Title: Elisabeth Mann Borgese

Fonds #: MS-2-744

Box-Folder Number: Box 339, Folder 9

Series: Administrative records of the International Ocean Institute

Sub-Series: Administrative records

File: Second meeting of the courses development committee of the International Ocean Institute (IOI)

Description of item:

File contains a copy of C. Venkatachalam's CV.

Reason for separation:

2 pages have been removed from digital copy due to privacy concerns.