

CIRCULAR LETTER 51/2001
23 October 2001

**THIRD COURSE ON "NAUTICAL CARTOGRAPHY"
AT THE INTERNATIONAL MARITIME ACADEMY (IMA),
TRIESTE, ITALY
(4 February – 20 September 2002)**

Dear Sir,

The International Maritime Academy (IMA) in Trieste has informed the IHB, on behalf of the Italian Authorities, that a third course on "Nautical Cartography" has been scheduled in 2002.

The course will start on Monday, 4 February 2002 and will end on Friday, 20 September 2002.

This third course is intended for twelve students from all countries. Government authorities responsible for Hydrography in their countries are requested to forward their candidates' applications to the International Maritime Academy (IMA), via Eduardo Weiss 15, 34127 Trieste, Italy (Telephone: +39 040 350829, Fax: +39 040 350322 and E-mail imoima@imoima.org) **through the ITALIAN EMBASSY in their country**, with a copy to the International Hydrographic Bureau. **The nominations not sent to the Italian Embassies, will not be accepted.** and therefore will not be taken into consideration for the selection. **Nominations must reach the IMA by 17 December 2001 at the latest.**

The support provided by IMA will cover travel expenses, local transport in Trieste, accommodation and food. **Money for other personal expenses (pocket money) must be provided by each STUDENT'S NATIONAL AUTHORITY. (See Annex 2, page 5).**

The course is of great importance for its objectives, its duration and technical content.

It is hoped that the Hydrographic Community, and, in particular, the European Hydrographic Institutes are available and willing to give their support to IMA in terms of lecturers, on the basis of the requests which IMA will address directly to each country.

Information on the course programme and logistics are provided in Annex 2. A Nomination Form and an Acceptance Form are also provided (Annex 3).

On behalf of the Directing Committee,
Yours sincerely,

Rear Admiral Giuseppe ANGRISANO
President

Annex 1 -	Distribution list	(in English only)
Annex 2 -	Course Details & Logistics	(in English only)
Annex 3 -	Nomination Form for Participation & Acceptance Form	(in English only)

DISTRIBUTION LIST

- All IHO Member States
- Selected Non-IHO Member States (including pending Member States)
Bulgaria, Cameroon, Honduras, Latvia, Malawi, Mauritius, Mexico, Myanmar, Nicaragua, Palestine, Panama, Saudi Arabia, Slovenia, Tanzania.
- International Maritime Organization, Technical Co-operation Division, Mr. David Edwards, 4 Albert Embankment, London SE1 7SR, UK.
- EC DGVII Maritime Transport – Head of Division, Mr. W. De Ruiter, European Commission, 200, Rue de la Loi, Brussels, Belgium.
- European Commission Directorate General-Energy and Transport, Mr. Roberto Salvarani Head of Unit for Information and Communication, 200, Rue de la Loi, Brussels, Belgium.
- International Maritime Academy, Trieste, Italy.
- Italian Ministry of Foreign Affairs, Directorate General for Cooperation to Development, Piazzale della Farnesina 1, Rome, Italy.
- Italian Ministry of Foreign Affairs, Servizio del Contenzioso Diplomatico e dei Trattati, Prof Umberto Leanza, Piazzale della Farnesina 1, 00194 Roma, Italy.
- Italian Ministry of Foreign Affairs, DGCS Ufficio IX, viale Tiziano 80 – Rome, Italy.
- President of the Regional Council, Dr. Renzo Tondo, Piazza Unità d'Italia 1, 34121 Trieste, Italy.
- Friuli-Venezia Giulia Region, Assessore Regionale ai Trasporti , via Giulia 75/1, 34125 Trieste, Italy.
- President of the Province of Trieste, Piazza Vittorio Veneto 4, 34132 Trieste, Italy.
- President of Trieste Port Authority, Punto Franco Vecchio, 34135 Trieste, Italy.
- University of Trieste – Magnifico Rettore, Piazzale Europa 1 (Rettorato), 34100 Trieste, Italy.
- President of Trieste Chamber of Commerce, Piazza della Borsa 14, 34100 Trieste, Italy.

DETAILS OF THE COURSE

Background

***///* Requirements for the Course**

At present nautical cartographers are generally trained at Hydrographic institutes through in-house training. This usually only applies, however, to Services with sufficient resources to make qualified nautical cartographers available for dedicated training requirements.

Generally speaking, HOs – having to deal with both traditional and innovative responsibilities - are usually affected by a lack of personnel, thus resulting in difficulties in providing didactic as well as production. Newly-established HOs obviously may not be in a position to engage in any in-house training.

It was therefore felt that there exists a need for an appropriate institution, capable of organising and presenting courses for nautical cartographers, to proceed with the development of such a course (as was recently recommended by the IHB) in order to improve staff knowledge and introduce new technology.

***///* Aim of the course and prospective users**

The aim of the course is to train nautical cartographers to be employed at Hydrographic Services and at other cartographic bodies, able to perform the following:

- ?? Elaborate a cartographic scheme in accordance with local coastal morphology, maritime traffic and port features;
- ?? Plan a new chart, selecting proper projection size and scale, in accordance with pertinent cartographic scheme;
- ?? Evaluate extant hydrographic and topographic data, in order to produce charts with both traditional and electronic systems;
- ?? Compile a new chart, using traditional means as well as computer-aided cartographic systems, in compliance with INT specifications;
- ?? Acquire a working knowledge of photomechanical and printing techniques, in order to be able to understand and evaluate issues connected with the production of traditional charts;
- ?? Convert a traditional chart into an electronic chart, by digitising existing traditional charts in the standard format or alternatively, verifying – when necessary – a third party's digitization;
- ?? Acquire a basic knowledge of the structure of geographically defined relational databases
- ?? Update charts in both traditional and digital formats;
- ?? Acquire awareness of legal aspects connected with nautical cartography.

***///* Attendees (entry requirements)**

Course applicants should belong to a Hydrographic Service or to other bodies responsible for nautical cartography and should at least hold a Higher School Completion Certificate.

***///* Total duration**

8 months (1 academic year)

***///* Number of participants**

In order to ensure maximum didactic efficacy, classes should not exceed 12 students.

***///* Languages**

The course will be held in English

***///* Course certificate, diploma**

The model course is produced by an international Working Group, with the co-ordination of the IMA and the supervision of the IHB.

The course will be submitted to the FIG–IHO Advisory Board to obtain recognition “A” level as the standards of competence for Nautical Cartographers will be officially issued.

Upon successful completion of the course, a document will be issued by the IMA certifying that the holder has successfully completed a course in Nautical Cartography.

COURSE OUTLINE

The duration of the course will be 8 months (33 weeks). Lessons will be, generally, 7 hours per day, from Monday to Friday, for a total number of 1151 hours.

The course has been subdivided into the following 15 modules. Every module contains specific segments which are developed taking into consideration the requirement of the course and the time allocated.

The programme includes complementary activities such as visits to cartographic institutes and printing organizations.

Most modules end with a practical project. All aspects will be evaluated and will be used for determining the final course work.

Tests will be given on completion of the following modules: basics, geodesy, chart projections, databases, GIS applications, legal administrative aspects.

GENERAL INTRODUCTION	5		
1. Basics	140		
1.1 Mathematics and Statistics	80		
1.2 Computers	60		
2. General	10		
2.1 Introduction	2		
2.2 International Organizations	4		
2.3 National Organizations	4		
3. Geodesy	70		
3.1 General Figure of the Earth	7		
3.2 Geometrical Foundations relate to Geodetic Reference Ellipsoid	14		
3.3 Reference Systems- Geodetic Datums	14		
3.4 Fundamentals of Three-Dimensional Geodesy	14		
3.5 The Geodesic (Orthodromic) and Loxodromic Curve on the Ellipsoid	14		
3.6 Project Work:1	7		
4. Chart Projections	70		
4.1 General Theory	14		
4.2 Mercator Projection	3		
4.3 Gaussian Projections	14		
4.4 Lambert Projection	7		
4.5 Polar Stereographic	7		
4.6 Cartographic Projections	14		
4.7 Summary of Geodesy and Projections	4		
4.8 Project	7		
5. Navigation	46		
5.1 General Principles	7		
5.2 Types of Navigation	4		
5.3 Systems and Methods	7		
5.4 Port and Coastal traffic	3		
5.5 Hydrographic notes	4		
5.6 Project 3	21		
6. Nautical Charts	70		
6.1 Introduction	4		
6.2 Definitions	6		
6.3 Specifications	14		
6.4 Chart Schemes	9		
6.5 Production systems-methods	2		
6.6 Project 4	35		
7. Cartographic data	70		
7.1 General	2		
7.2 Topography	4		
7.3 Hydrography	4		
7.4 Navigational Aids and Navigational Systems	3		
7.5 Sailing Directions and other textual information	3		
7.6 Tides-vertical datums	4		
7.7 Photogrammetry and aerial photography	4		
7.8 Satellite imagery	4		
7.9 Data evaluation	6		
7.10 Data preparation	6		
7.11 Data assimilation	6		
7.12 Quality control	3		
7.13 Project 5	21		
8. Field data	70		
8.1 Topography	7		
8.2 Hydrography	7		
8.3 Reconnaissance	4		
8.4 Oceanography	4		
8.5 Marine geology	3		
8.6 Project 6	45		
9. Traditional cartography	105		
9.1 Compilation	7		
9.2 Drafting	3		
9.3 Printing	3		
9.4 Quality control	3		
9.5 Project 7	89		
10. Computer assisted cartography	161		
10.1 Types of digital data: raster, vector	4		
10.2 Digital cartographic systems	4		
10.3 Data capture methods	10		
10.4 Migration procedures	5		
10.5 Products	3		
10.6 Quality control	9		
10.7 Project 8	94		
11. Databases	28		
11.1 Relational databases	14		
11.2 Object oriented databases	14		
12. ENC Production	210		
12.1 Theoretical overview	32		
12.2 Procedures, methods and tools	94		
12.3 Project 9	84		
13. Cartographic maintenance	21		
13.1 Traditional	7		
13.2 Digital	7		
13.3 ENC	7		
14. GIS applications	35		
14.1 Principles and criteria	7		

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14.2 Theoretical approach.....	14	15. Legal Administrative aspects	26
14.3 Special issues	14	15.1 Product liability	4
		15.2 Copyright	2
		15.3 Law of the sea	6
		15.4 Delimitation zones	7
		15.5 Project 10	7

Complementary Activities

Visits: Technical visits will be held during the weeks dedicated to the ENC Production module.

Final Tests 14 hours at the end of the course

LOGISTICS

Accommodation: Twin-bedded rooms (two students per room) for the entire period of the course.

Food arrangements: breakfast, lunch and dinner will be provided by IMA.

Health and accident insurance will be provided by IMA.

Pocket money and other personal expenses will be at the charge of the organization to which the student belongs.

Assistance in obtaining a visa may be provided by IMA, but should be the responsibility of the National Organization.

Prepaid air tickets will be made available at a selected air company (will be communicated by IMA) in the country.

Note: The air ticket will have to be refunded in case of non-completion of the course.

COURSE ON NAUTICAL CARTOGRAPHY

From 4 February to 20 September 2002

NOMINATION FORM FOR PARTICIPATION

A completed nomination form should be submitted to the Director of the International Maritime Academy,* Trieste, Italy **THROUGH THE ITALIAN EMBASSY****, with a copy to the IHB Monaco***. Nominations should be made as early as possible, using a separate form for each nomination, indicating clearly the Government's priority if more than one participant is nominated:

1. FAMILY NAME
- FIRST NAME.....
- OTHER NAME
2. Mailing address.....
-
-
- Telephone
- Fax
- E-Mail.....
3. Nearest airport where air travel will commence and terminate:
- Name of airport.....
- Location
4. Date of birth.....
5. Sex: Male Female
6. Place of birth.....
7. Nationality
8. Passport No.....
9. Date and Place of Issue

*International Maritime Academy, via Eduardo Weiss 15, 34127 Trieste, Italy. (Fax: +39 040 350322.e-mail: <imoima@imoima.org>)

****The nominations not transmitted to the Italian Embassy will not be accepted and taken into consideration**

***International Hydrographic Bureau, BP445, MC 98011 MONACO CEDEX, Principality of Monaco.(Fax: +377 93 10 81 40; e-mail: <info@ihb.mc>).

10. Person to notify in case of emergency:

Name.....

Address

.....

Telephone

Fax

E-Mail.....

11. Present position and description of duties.....

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12. Educational background.....

.....

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13. Previous experience

.....

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Nominee's signature

The above-mentioned person is nominated as our first/second possible participant in the course:

Name and signature of Government official authenticating this nomination

Title

ACCEPTANCE FORM

I hereby accept the invitation of the International Maritime Academy (IMA) to participate in the Course on Nautical Cartography (from 04.02.2002 – 20.09.2002).

I confirm that:

1. I will refrain from engaging in political, commercial and any activities other than those governed by the course programme;
2. I will advise the Academy immediately if I am unable to attend the course; and
3. I will travel to Trieste, Italy and return to my home country at the end of the course, as appropriate, by the route designated by the Academy.

Signature of Participant

Name of Participant
(Printed)

Address

.....

.....

Date