



IHB File No. TA-6

CIRCULAR LETTER 50/2002  
28 October 2002

**FOURTH COURSE ON "NAUTICAL CARTOGRAPHY"  
AT THE INTERNATIONAL MARITIME ACADEMY (IMA),  
TRIESTE, ITALY  
(24 February 2003 – 05 September 2003)**

Dear Hydrographer,

The International Maritime Academy (IMA) in Trieste has informed the IHB, on behalf of the Italian Authorities, that a fourth course on "Nautical Cartography" has been scheduled in 2003.

The course will start on Monday 24 February 2003 and will end on 5 September 2003.

This course is intended for twelve students from all countries. Government authorities responsible for Nautical Cartography 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](mailto: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 7 January 2003 at the latest.**

The support provided by IMA will cover travel expenses, local transport to Trieste, accommodation and food. **Money for other personal expenses (pocket money) must be provided by each Student's National Authority. (See Annex 2, page 3).**

The course is of great importance with regards to its objectives, duration and the 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 the logistics are provided in Annex 2. A copy of the Nomination Form is also attached (Annex 3).

On behalf of the Directing Committee,  
Yours sincerely,  
(original signed)  
Captain Hugo GORZIGLIA  
Director

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

**DISTRIBUTION LIST**

All IHO Member States

International Maritime Organization, Technical Co-operation Division, Mr. David Edwards, 4 Albert Embankment, London SE1 7SR

EC DGVII Maritime transport – Head of Division Mr. W. De Ruiter.

European Commission Directorate General-Energy and Transport, Mr. Roberto Salvarani Head of Unit for Information and Communication, 200, Rue de la Loi, Bruxelles.

International Maritime Academy, Trieste, Italy.

Italian Ministry of Foreign Affairs, Directorate General for Cooperation to Development, Piazzale della Farnesina 1, 00194 Rome, Italy.

Italian Ministry of Foreign Affairs Servizio del Contenzioso Diplomatico e dei Trattati, Prof Umberto Leanza, Piazzale della Farnesina 1, 00194 Roma

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.

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

### ▪ **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;
- 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 basic knowledge of the structure of geographically defined relational databases
- Update charts in both traditional and digital formats;
- Draw delimitations lines on charts (United Nations Convention on the Law of the Sea)

### ▪ **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.

### ▪ **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 was 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 28 weeks. Lessons will be, generally, 7 hours per day, from Monday to Friday, for a total number of 973 hours.

The course has been subdivided into the following 14 modules.

Every module contains specific segments which are developed taking into consideration the requirement of the course and the time allocated.

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, nautical charts, law of the sea.

<i>Modules</i>	<i>Hours</i>
<b>GENERAL INTRODUCTION .....</b>	<b>1</b>
<b>1. Basics .....</b>	<b>140</b>
1.1 Mathematics and Statistics .....	80
1.2 Computers .....	60
<b>2. General .....</b>	<b>10</b>
2.1 Introduction .....	2
2.2 International Organizations .....	4
2.3 National Organizations .....	4
<b>3. Geodesy .....</b>	<b>70</b>
3.1 General Figure of the Earth .....	7
3.2 Geometrical Foundations relative 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
<b>4. Chart Projections .....</b>	<b>70</b>
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 2 .....	7
<b>5. Navigation .....</b>	<b>42</b>
5.1 General Principles .....	7
5.2 Types of Navigation .....	4
5.3 Systems and Methods .....	4
5.4 Port and Coastal traffic .....	3
5.5 Hydrographic notes .....	4
5.6 Project 3 .....	20
<b>6. Nautical Charts and Cartographic</b>	
<b>Data .....</b>	<b>91</b>
6.1 Definitions .....	2
6.2 Specifications .....	7
6.3 Chart Schemes .....	7
6.4 Production systems-methods .....	2
6.5 Topography .....	4
6.6 Hydrography .....	4
6.7 Navigational Aids and Systems .....	3
6.8 Sailing Directions and other textual information .....	3
6.9 Tides-vertical datums .....	3
6.10 Photogrammetry and aerial photography .....	4
6.11 Satellite imagery .....	3
6.12 Data evaluation .....	6
6.13 Data preparation .....	6
6.14 Data assimilation .....	6
6.15 Quality control .....	3
6.16 Project 4 .....	7
6.17 Project 5 .....	21
<b>7. Field data .....</b>	<b>40</b>
7.1 Project 6 .....	40
<b>8. Traditional cartography .....</b>	<b>105</b>
8.1 Compilation .....	7
8.2 Drafting .....	3
8.3 Printing .....	3
8.4 Quality control .....	3
8.5 Project 7 .....	89
<b>9. Computer assisted cartography .....</b>	<b>140</b>
9.1 Types of digital data: raster, vector .....	4
9.2 Digital cartographic systems .....	4
9.3 Data capture methods .....	10
9.4 Migration procedures .....	5
9.5 Products .....	3
9.6 Quality control .....	9
9.7 Project 8 .....	105

<b>10. Databases</b> .....	<b>14</b>	12.2 Digital.....	5
10.1 Relational databases .....	7	12.3 ENC.....	4
10.2 Object oriented databeses.....	7	<b>13. GIS applications</b> .....	<b>35</b>
<b>11. ENC Production</b> .....	<b>175</b>	13.1 Principles and criteria .....	7
11.1 Theoretical overview.....	25	13.2 Theoretical approach.....	14
11.2 Procedures, methods and tools.....	80	13.3 Special issues .....	14
11.3 Project 9 .....	70	<b>14. Law of the Sea-Delimitations</b> .....	<b>21</b>
<b>12. Cartographic maintenance</b> .....	<b>14</b>	14.1 Law of the sea .....	7
12.1 Traditional.....	5	14.2 Delimitation zones .....	7
		14.3 Project 10 .....	7

## 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 24 February to 5 September 2003

**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.....

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\* 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 .....

.....

12. Educational background .....

.....

.....

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 24.02.2003 – 05.09.2003).

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.....

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Date .....