MODEL COURSE

C2001-2

MARINE AIDS TO NAVIGATION – TECHNICIAN TRAINING
INTRODUCTION TO MARINE AIDS TO NAVIGATION - BUOYAGE

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DOCUMENT REVISION

Revisions to this document are to be noted in the table prior to the issue of a revised document. The latest edition of the model course is the only version in force unless the model course is explicitly revoked by the Council.

Date	Revision details	Approval
June 2016	Edition 1.0 Minor text amendments and update of Teaching Modules	
June 2026	Edition 2.0 Entire document, minor textual and time in hours changes	Council 04

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FOREWORD

The International Organization for Marine Aids to Navigation (IALA) recognizes that training in all aspects of Marine Aids to Navigation (AtoN) service delivery, from inception through installation and maintenance to replacement or removal at the end of a planned life-cycle, is critical to the consistent provision of that AtoN service.

Under the SOLAS Convention, Chapter 5, Regulation 13, contracting governments should undertake to take into account existing international recommendations and guidelines when establishing aids to navigation. A footnote is included referencing inter alias recommendations and guidelines of IALA.

IALA has adopted the normative Recommendation R0141 on Training and Certification of AtoN Personnel. In order to help Members of the Organization, AtoN authorities and other stakeholders worldwide to confirm with the provisions of the Recommendation a series of model courses covering elements of training for AtoN personnel have been developed by the Committees and the World-Wide Academy of the Organization (WWA).

It is intended that such courses shall be conducted by a training institute or an organization accredited by a competent authority in a Member State of the Organization or Non-member State. This model course is intended to provide Members, AtoN authorities and other appropriate stakeholders with specific guidance on the training of AtoN technicians in shore marks.

PART 1 – COURSE OVERVIEW

1. SCOPE

This course is intended to provide technicians with the theoretical training necessary to have a satisfactory understanding of the types and function of floating marks (buoys) and the lights and other AtoN that can be fitted to them.

This introductory course is intended to be supported by further training modules on practical aspects of buoy handling, moorings, deployment and maintenance. Details of these supporting model courses can be found in the Level 2 Technician training overview document C2000 Level 2 Technician Training Model Course Overview..

2. OBJECTIVE

Upon successful completion of this course, participants will have acquired sufficient knowledge and skill to recognize the types and functions of floating marks and the lights and other AtoN fitted to them whilst on the job within their organizations.

3. COURSE OUTLINE

This mainly theoretical course is intended to cover the knowledge required for a technician to recognize and understand the suite of AtoN that can be fitted to floating marks. The complete course comprises two classroom modules, dealing with floating marks. Module 3 comprises a site visit designed to consolidate theoretical knowledge. Each module begins by stating its scope and aims, and then provides a teaching syllabus.

4. TEACHING MODULES

Table 1 ***Table of Teaching Modules***

Module Title	Time in hours	Overview
Introduction to buoys and the light sources fitted to them	2.0	This module describes the concept of a buoy as a floating platform for AtoN and the types of marine lanterns that can be fitted to them with an introduction to the concept of range
Introduction to other AtoN fitted to buoys	1.0	This module describes the types and functions of both active and passive additional AtoN that can be fitted to floating marks
Site visit	2.0	To visit an appropriate coastal location to see and recognize various types of floating marks and describe their function and the lights and other AtoN fitted to them
Evaluation	1	Written test
Total Hours	**6**	1 day course

5. SPECIFIC COURSE RELATED TEACHING AIDS

1 This course involves both classroom instruction and a visit to a coastal area. Classrooms should be equipped with blackboards, whiteboards, and overhead projectors to enable presentation of the subject matter.

2 Copies of a large scale nautical chart of the coastal area selected for the site visit for the pre-visit brief.

3 Trainees should have access to binoculars for the site visit. If the site visit includes a sea trip, all appropriate safety clothing and life-saving equipment should be made available.

6. ACRONYMS

To assist in the use of this model course, the following acronyms have been used:

AIS	Automatic Identification System
AtoN	Marine Aids to Navigation
IALA	International Organization for Marine Aids to Navigation
L	Level
MBS	IALA Maritime Buoyage System
RACON	Radio Beacon
SOLAS	International Convention for the Safety of Life at Sea, 1974 (as amended) WWA
	World Wide Academy

7. DEFINITIONS

The definition of terms used in this Guideline can be found in the International Dictionary of Marine Aids to Navigation..

8. REFERENCES

In addition to any specific references required by the competent authority, the following material is relevant to this course:

1 IALA NAVGUIDE.

2 IALA Recommendation R1001 The IALA Maritime Buoyage System (MBS).

3 IALA Recommendations R0141 on Training and Certification of Marine Aids to Navigation Personnel

4 IALA Guideline G1035 on Availability and Reliability of Marine Aids to Navigation.

5 Technical documentation from equipment manufacturers.

PART 2 – TEACHING MODULES

1. MODULE 1 – INTRODUCTION TO BUOYS AND LIGHT SOURCES FITTED TO THEM

1.1. SCOPE

This module describes the concept of a buoy as a floating platform for AtoN and the types of marine lanterns that can be fitted to them with an introduction to the concept of range.

1.2. LEARNING OBJECTIVE

To gain a basic understanding of the function and types of buoys and the marine lanterns that can be fitted to them.

1.3. SYLLABUS

1.3.1. LESSON 1 – INTRODUCTION TO BUOYS

1 The floating platform for AtoN

2 The concepts of buoyancy, stability and moorings

3 Sizes of buoys and their applications

4 Superstructure, shape and topmarks

1.3.2. LESSON 2 – MARINE LANTERNS (GENERAL)

1 Types of marine lanterns

2 Colours of light sources and their uses

1.3.3. LESSON 3 – LIGHT CHARACTERS AND RANGES

1 The concept of light characters

2 Introduction to the nominal and geographic range of marine lanterns

2. MODULE 2 – INTRODUCTION TO OTHER AtoN FITTED TO BUOYS

2.1. SCOPE

This module describes the types and functions of both active and passive additional AtoN that can be fitted to floating marks.

2.2. LEARNING OBJECTIVE

To gain a basic understanding of the types and functions of additional AtoN that can be fitted to floating marks.

2.3. SYLLABUS

2.3.1. LESSON 1 – INTRODUCTION TO RADIONAVIGATION AtoN ON BUOYS

1 Function of a Racon

2 Morse Code characters used by Racons

3 Passive radar reflectors

4 Radar Target Enhancers

5 Basic functions of AIS on buoys

2.3.2. LESSON 2 - MECHANICAL AND ELECTRICAL SOUND SIGNALS

1 Functions of sound signals

2 Bells, whistles and gongs

3 Electrical sound signals

3. MODULE 3 - SITE VISIT

3.1. SCOPE

To visit an appropriate coastal location to identify and recognize various types of floating marks and then to describe their function and the lights and other AtoN fitted to them.

3.2. LEARNING OBJECTIVE

To consolidate theoretical classroom study through a practical visit to coastal floating marks.

3.3. SYLLABUS

Visit to an appropriate coastal area to study different types of floating marks and the AtoN fitted to them.