



Spanish Educational Web site on radiation Protection.

Nuclear Medicine Course

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Spanish Education and Training Programmes on RP

based on the national regulations related to radioactive facilities licensing and radiation protection.

Radiation Protection Training Project

BASED ON:

Personnel Licenses and Accreditations



given by the Regulatory Body

responsible for the definition of the training programs.

The system of personnel licenses

two levels according to responsibilities assigned during the operation of the radioactive facility.

Supervisors or QE
and Operators

TRAINING PROGRAMMES (V)

according to the uses, capabilities and responsibilities:

**Nuclear Medicine,
Radiotherapy,
Laboratories using non sealed sources,
Industrial Radiography
Process Control and Analytical Techniques.**

X-Ray facilities.

Radiation Protection Training Project

Spanish Regulatory Body (CSN) and CIEMAT, are developing this project based on an educational web site to achieve and maintain a high level of safety and best practice in the radioactive facilities.

Material Docente

MATERIAL DOCENTE DE LOS CURSOS
DE OBTENCIÓN DE LICENCIAS Y ACREDITACIONES
PARA LA OPERACIÓN EN
INSTALACIONES RADIATIVAS Y DE
RADIODIAGNÓSTICO

WEB SITE

to provide educational material
to facilitate **to the organisers, trainers and
professional**, the management, organization and
development of **the courses to obtain required
licenses**

on different fields:

nuclear medicine, Radiotherapy,
Laboratories using non sealed sources, Industrial
Radiography
Process Control and Analytical Techniques, and X
rays



This paper presents the advances in the educational web site that will be accessible through the CSN web.

The presentation shows

the training packages developed to qualify Operators and Supervisors working in Nuclear Medicine facilities.

PROJECT OBJECTIVES

- To facilitate the management, organization and development of the courses designed to obtain licenses and accreditation.
- To standardise the RP training material of those courses.
- To guarantee the quality of the training material and, therefore, the adequate training in each applied fields and level of responsibility.
- To contribute to the harmonization of RP training material.

PROJECT STRUCTURE

- Modular design.

CSN Review => compliance with regulations (licenses granting, course certification).

- lectures prepared by groups of professionals involved in radiation applications and radiation protection training.

PROJECT DEVELOPMENT

For each one of the uses of radiation a set of training tools is developed, including:

- Learning objectives
- Training schedule
- Lecture notes for students
- Examples
- Questions
- Syllabus
- Visual aids for trainers
- Practical training sessions, demonstrations and laboratory exercises.

RESULTS: NM COURSE



Nuclear medicine training programme

Includes the prerequisite educational level, the training requirements, competences and the training packages for Nuclear Medicine workers.

In the Nuclear Medicine Services,

Operators: Nuclear Medicine Technologists and nurses

Supervisors: NM Physicians, Qualified Experts, Medical Physicist

We use a modular approach including one basic or general module covering the basic learning objectives, which includes matters shown in next slides

The core learning objectives are supplemented with specific material covering NM applications.

The user can choose to obtain the information included in the web site by downloading the complete course or by obtaining the individual modules stepwise

BASIC MODULE

**Curso de OPERADORES de instalaciones radiactivas (IR).
MÓDULO BÁSICO.**

Curso de OPERADORES de instalaciones radiactivas (IR). MÓDULO BÁSICO.

ID	PROGRAMA	OBJETIVOS	TEXTOS	MAT. COMPLEMEN.
[IR-OP-BA]				

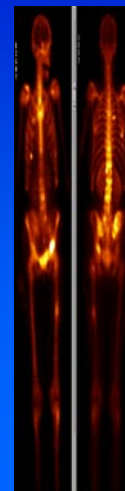
[obtener](#)



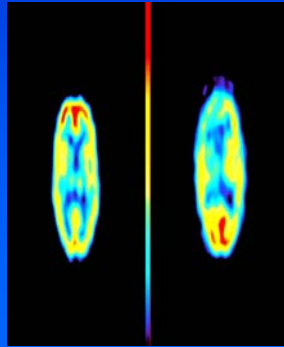
Basic module

syllabus and total hours required of courses devoted to radioactive facilities

Syllabus; TRAINING TOPICS	operator	supervisor
Module 1: BASIC AREA		
Nuclear physics and Interaction of radiations with the matter	2	3
Radiological units	1	1
Detection and Measurement Methods. Dosimetry	2	2
Biological effects of radiation	1.5	1.5
Radiation Protection. General criteria	1	1.5
Radiological protection. Occupational exposures. Wastes	2.5	3
National and European regulations	1	1.5
Practical works and seminars	6	8
Evaluation	Y	Y
TOTAL (Basic area):	16	20



And the syllabus to the Nuclear Medicine field, for both levels: operator/supervisor.



Syllabus; TRAINING TOPICS	operator	supervisor
MOD.2 NUCLEAR MEDICINE		
Nuclear medicine procedures and objectives. Instrumentation in NM	2	3
Diagnostic and therapeutic procedures	1	1
Associated risks. Training and information.	1	1.5
Radiation protection: workers and patients. System of radiological protection for medical exposures.	4	4.5
Quality assurance in NM services and legal aspects.	2	3
Specific practical works, seminars and Technical visit	10 h.	12 h.
Evaluation	Y	Y
TOTAL N. Medicine:	20 h	25 h

Ciemat

RESULTS we can see in the screen

CURSOS DEL CSN - CURSO IR-OP-BA - Netscape

Archivo Edición Ver Ir Comunicador Ayuda

Anterior Siguiente Recargar Inicio Buscar Guía Imprimir Seguridad Parar

Marcadores Dirección: <http://eias.ciemat.es/sweb/csn/cursos/ir-op/ir-op-ba.html> Elementos rel.

CSN CONSEJO DE SEGURIDAD NUCLEAR **Material Docente**

INICIO CURSOS DESCARGAR

Curso de OPERADORES de instalaciones radiactivas (IR). MÓDULO BÁSICO.

ID	PROGRAMA	OBJETIVOS	TEXTOS	MAT. COMPLEMEN.
[IR-OP-BA]	obtener	obtener	obtener	obtener

Para descargar cada módulo del curso, pulsar con el botón derecho del ratón sobre el icono y señalar 'guardar destino/enlace como...'

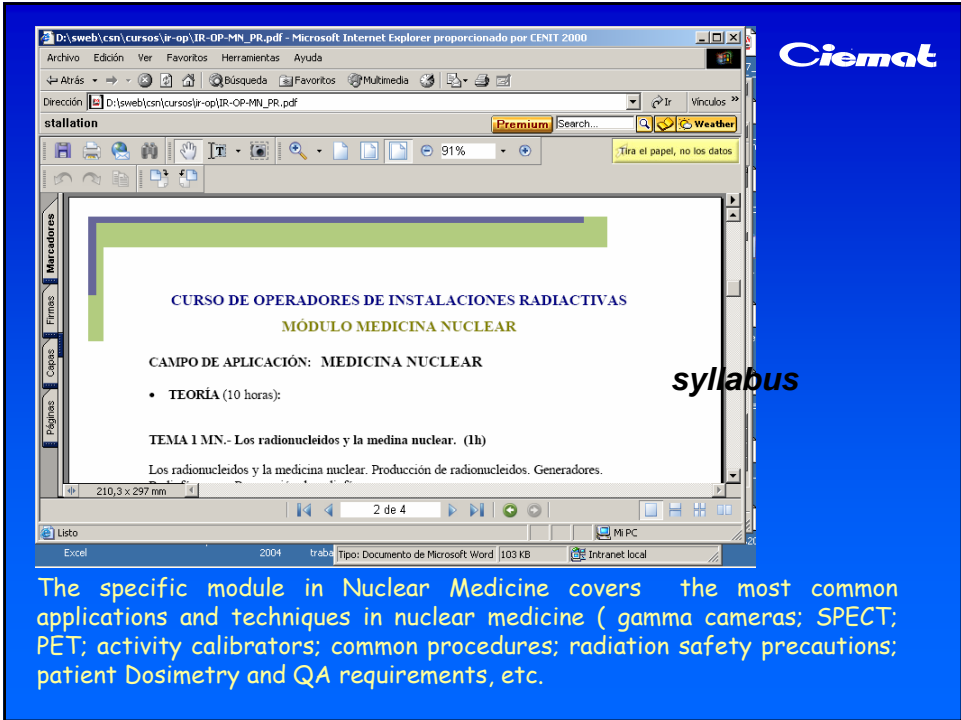
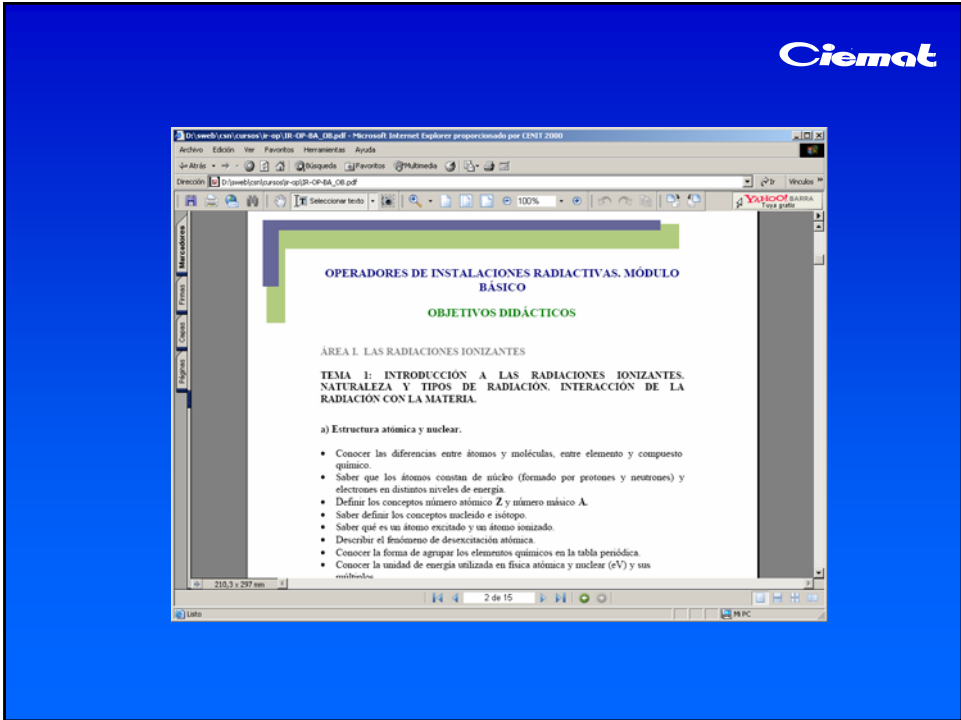
INTRODUCCIÓN

El Reglamento sobre Instalaciones Nucleares y Radiactivas establece la necesidad de que los solicitantes de las licencias de operadores de instalaciones radiactivas acrediten una formación en protección radiológica adecuada, mediante la superación de cursos impartidos por entidades públicas o privadas. Estos cursos deben de estar homologados por el CSN. En la [Guía de Seguridad 5.12](#) del CSN se recoge el procedimiento a seguir para la homologación de cursos de formación de operadores de instalaciones radiactivas.

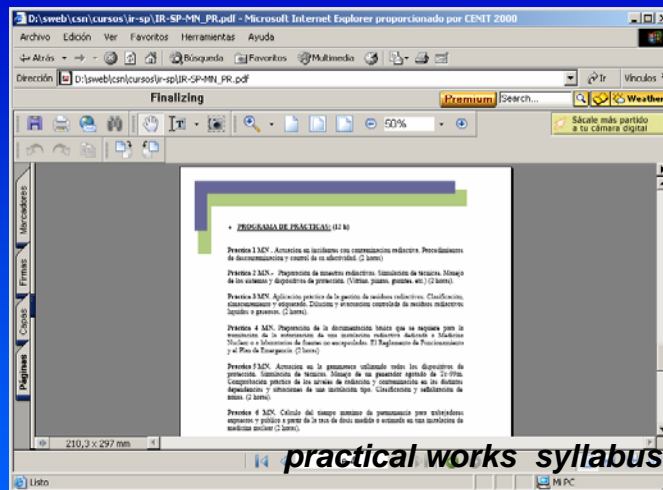
El material docente que se presenta es el contenido mínimo exigido por el CSN para la organización de cursos de formación de operadores de instalaciones radiactivas.

Documento: Ejecutado

Ciemat



The specific module in Nuclear Medicine covers the most common applications and techniques in nuclear medicine (gamma cameras; SPECT; PET; activity calibrators; common procedures; radiation safety precautions; patient Dosimetry and QA requirements, etc.



practical works syllabus

- course includes practical works to provide the participants hands-on and individual practical training.
- practical works should be developed in the NM services.

This course on NM lasts two weeks depending on the target audience.

Conclusions:

The project includes training tools developed in a modular approach.

The training program is based on the use of a web site. Complete materials for trainers and trainees will be available to ease courses performance.

The basic module covers the general aspects related to radiation exposures and the specific module covers the most common nuclear medicine techniques.

The training packages on NM developed in this project cover the minimum standards of radiation protection training required by the Spanish regulatory Body.

Task in each of the training modules has been designed to develop specific competence taking into account different target groups.

Rosa Villarroel from CSN will show you how it works



Gracias por su atención