

EXPERIENCE IN TEACHING HEALTH PHYSICS AT "POST LAUREAM" LEVEL AT THE UNIVERSITY OF PISA

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We describe the experience achieved in teaching Health Physics at "post lauream" level at the Department of Physics of the University of Pisa in the past 13 years. An updated description of the overall situation at the Italian Universities is also presented.

The teaching of Health Physics at "post lauream" level in Italy was initiated in 1961 at the University of Bologna with an one-year course in "Radioprotection and Radioisotope Techniques". More than ten years later a second initiative was established at the University of Pisa with an one-year course in Health Physics ("Corso di Cultura in Fisica Sanitaria"), which was open to students with a degree in Physics, Engineering and Chemistry. The course was partially devoted to Health Physics, but other subjects were taught which were more related to Medical Physics. This was due to the fact that the discipline "Fisica Sanitaria" is not intended in Italy as an exact translation of the English term "Health Physics", but it has a more general meaning; for instance, it covers all the applications of the Physics to Medicine, which are tasks of the Departments of "Fisica Sanitaria" of the Italian Hospitals, as provided by the Reform of National Health Service Act [1969]. Thus the term "Fisica Sanitaria" should be thought of with a more general meaning of Health and Medical Physics, all throughout the paper.

The "Corso di Cultura in Fisica Sanitaria" was run at the University of Pisa for six consecutive years from 1974 to 1980. The technical and scientific support was provided by the Department of Physics and by the Institute of Nuclear Engineering of the University of Pisa, by the Institutes of Radiology and Nuclear Medicine of the University of Florence, by the Pisa branch of the National Institute of Nuclear Physics (I.N.F.N.) and by ENEA (the Italian Agency for Nuclear and Alternative Energies). A statistical analysis of the students who attended the course is presented in table 1. In summary, about 50% of the enrolled students completed the course, and about 80% of these already held or took after the completion of the course a job in Health and Medical Physics. From what was learned from our and from other experiences (similar courses were held at the Universities of Bologna and Milano) and taking into account the new University legislation (The Reform of University Act [1982] and the reform of the post lauream

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Table 1
Statistical analysis of the students of the
" Corso di Cultura in Fisica Sanitaria "

Academic year	1974-75	75-76	76-77	77-78	78-79	79-80	Total
Maximum number of students	no limit	no limit	12	15	15	10	-
Number of students enrolled	6	24	12	7	13	4	66
Number of students who have completed the course (in percentage)	5 83%	12 50%	8 67%	3 43%	6 46%	0 0%	34 52%
Number of students who have completed the course and have a job in Health or Medical Physics	5	9	6	3	5	-	28

Table 2
List of the subjects taught at the
"Specialty School in Fisica Sanitaria" of the
University of PISA

First year

Mandatory subjects:

- Advances in Physics
- Elementary in Biology, Anatomy and Human Physiology
- Physics and Dosimetry of Radiation (I)
- Instrumentation and Biomedical Technologies (I)

One among the following subjects:

- Biological Effects of Radiation
- Biophysics
- Electronics and Nuclear Instrumentation

Second year

Mandatory subjects:

- Protection of the Environment and of the Human Being
- Computer Science and Statistics in Medical Applications
- Physics and Dosimetry of Radiation (II)
- Instrumentation and Biomedical Technologies (II)

One among the following subjects:

- Physics Methodologies in Radiotherapy
- Physics Methodologies in Diagnosis

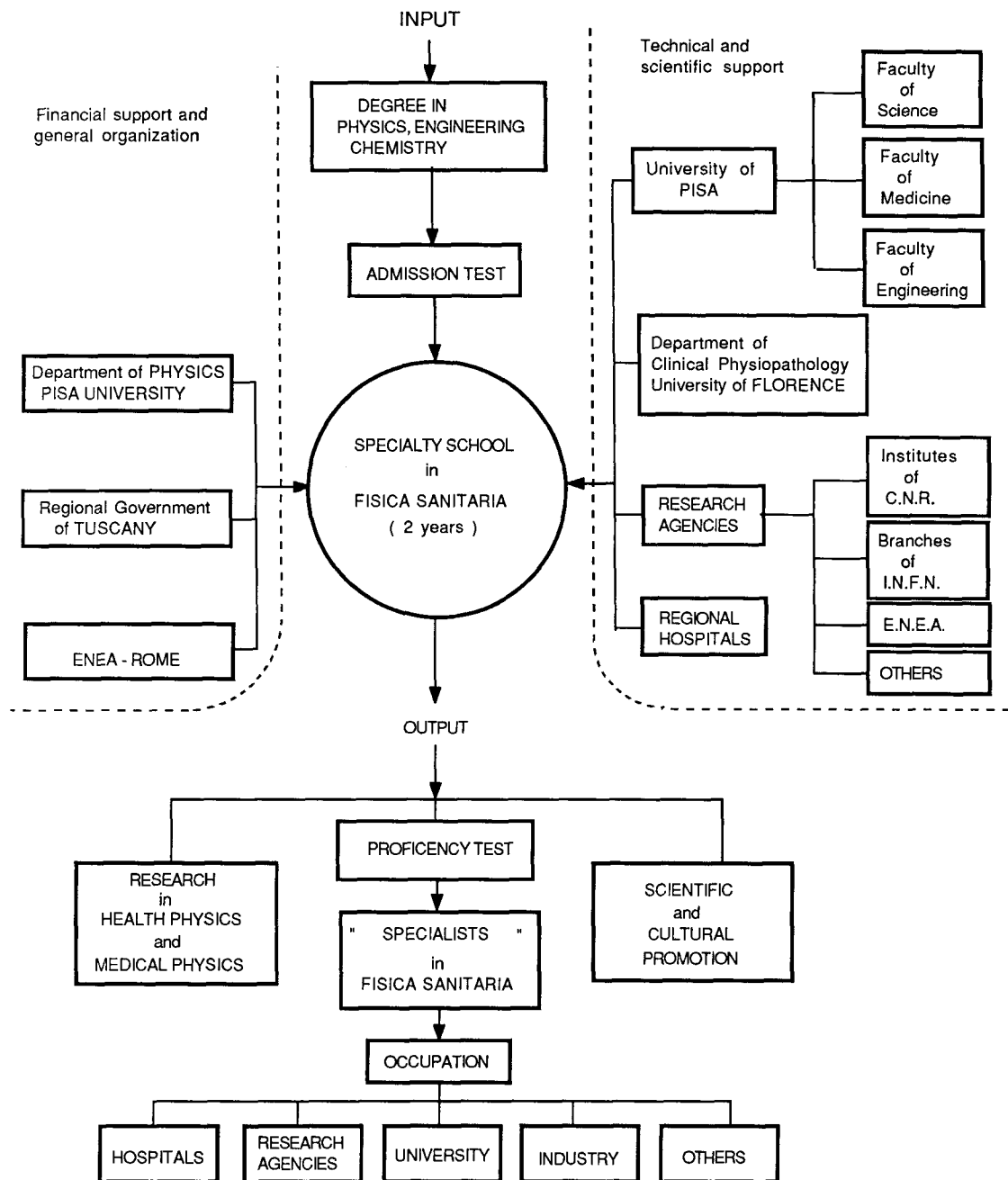


Fig. 1- General scheme of the Specialty School in "Fisica Sanitaria" of the University of Pisa

Teaching Act [1982]), there came evident that the existing one-year course should evolve into a two-year post graduate school. The Specialty School in "Fisica Sanitaria" was first established at the University of Pisa in 1983. It followed several modifications, also as a result of the general coordination with the other similar schools in Italy. Table 2 shows the subjects which will be taught as from 1988 and fig.1 shows the general scheme of the School.

There now exist five Specialty Schools in "Fisica Sanitaria": at the University of Bologna, Milano, Pisa, Roma "La Sapienza" and Roma "Tor Vergata" (see table 3): 52 students in total were enrolled in 1987 in the first year of these schools; this number almost fills the overall capability. New initiatives are under consideration among other universities, especially in the South of Italy. Over the last three years 50% of the students on average completed the two-year school and took the final exam to become "Specialists in Fisica Sanitaria". The various schools receive scientific and teaching support from many Departments of their own University (mainly related to the fields of Science, Medicine and Engineering), from Research Agencies (INFN,CNR,ENEA,..) and from Regional Hospitals (see table 4).

Table 3

Students enrolled in the first year of the existing italian
Specialty Schools in "Fisica Sanitaria"

Academic year	1982-83	83-84	84-85	85-86	86-87
University					
BOLOGNA	-	-	-	3	7
MILANO	15	15	20	10	17
PISA	-	3	3	2	5
ROMA "La Sapienza"	-	-	-	7	8
ROMA "Tor Vergata"	-	9	11	14	15

Table 4

Affiliation of the members of the Faculty of the School

	BOLOGNA	MILANO	PISA	ROMA "La Sapienza"	ROMA "Tor Vergata"
<u>University Departments</u>					
Science	10	4	3	8	4
Medicine	5	2	2	-	5
Engineering	1	-	1	-	9
Others	2	-	1	-	-
<u>Research agencies</u>	16	2	4	2	17
<u>Hospitals</u>	7	3	-	-	3
Total	41	11	11	10	38

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