

## Postgraduate Forensic Science Education in Turkey

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**ABSTRACT:** Legal medicine in Turkey, has an educational background that goes back to 1839 and the first autopsy in modern terms was performed in 1841. In the early days, it was common practice for those involved in this work to extend their investigative knowledge into areas not directly concerned with medical matters. However forensic medical investigations cannot be entrusted in the hands of single investigators, but should rather be dealt with by cooperative groups of experts nowadays.

This need was the major force for the establishment of the Institute of Legal Medicine and Forensic Sciences by a special article of the law (§2547) as a training and research center in 1982.

The Institute being the first and only institution giving master's and doctorate degrees in Forensic Sciences, has 3 major departments: 1) Medical Sciences Department, 2) Basic Sciences Department and 3) Social Sciences Department.

Graduates of various fields ranging from medical doctors specialized in any field, biologists, chemists to lawyers, district attorneys, psychologists and other related fields are composing the multidisciplinary structure of the institute.

The main research fields of the Institute are: population genetics, paternity investigation, child abuse, and identification of human remains.

**KEYWORDS:** forensic science, education, postgraduate education, Turkey

Legal Medicine in Turkey was born as a branch of and in parallel to the development of the legal system, criminal law in particular and medical science. It was in 1839 that the first legal medicine subjects appeared in the curricula of the medical education programs. The first legal medicine professor in the Ottoman Empire was the Austrian Dr. med. C. A. Bernard, followed by Dr. med Spritzer.

The first autopsy and its demonstration to the students was performed by Dr. med Bernard in 1841. The first Turkish professor of legal medicine was Dr. med. Serviçen Efendi (1815-1897) and the first book in Turkey on legal medicine written in Turkish was published in 1910 by Dr. med. Bahattin Şakir

In 1917, an official expertise institution was established under the auspices of the Ministry of Health. This institution included the departments of morgue, forensic psychiatry, and chemistry.

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This establishment was the nucleus of the Council of Forensic Medicine that today is the official expert witness organ of the Ministry of Justice.

The Council of Forensic Medicine today has the duty of giving expert witness reports to the court and prosecution however it cannot accept any private applications, therefore defense attorneys cannot benefit from it.

The Council has different departments like physics, chemistry, biology, traffic, and forensic psychiatry but for topics like ballistics, graphology and explosives the police criminal laboratories are much more beneficial for governmental applications.

Although training for legal medicine has been available for students since 1839, studies on various subjects such as forensic gynecology, forensic ophthalmology, forensic toxicology, forensic serology, document examination, ballistics and drug analysis leading to master's and doctorate degrees have been established only since 1982. Up to that date, the specialists have trained themselves by individual efforts and experience.

In 1982 the Institute of Legal Medicine and Forensic Sciences (LEMFOS) was established by a special article of law as a training and research center. LEMFOS is in a totally different status that apart from being a training and research center can function as an expert witness institution for both governmental and private applications.

### Objectives and Programs of LEMFOS

LEMFOS is an institute of higher learning that aims to teach the graduates of diverse disciplines, the forensic aspects of their fields. In doing so an interdisciplinary cooperation in a higher educational level is aimed to be reached, so that the legal system will maximally benefit of science.

For this purpose, LEMFOS as the one and only institution giving master and doctorate degrees in the field of Forensic Science in Turkey, is organized to three different departments to enable students to explore a particular interest across several fields. The organization of the departments is as follows.

#### *Medical Sciences Department*

The legal system very often needs the assistance of medical doctors as expert witnesses. The lack of an establishment in Turkey to teach and train the medicolegal aspects to specialized medical doctors was the initial force for the organization of this department. The regular full-time post-graduate study offered by the institute leads to a doctorate degree in Forensic Sciences for a) Medical doctors specialized in a field of medicine and b) Medical dentists.

The courses instructed by the Medical Sciences Department are listed as follows.

Number	Name	Credit
MEDF511	Traumatology	2
MEDF512	Thanatology	2
MEDF513	Autopsy	2
MEDF515	Collection and Preservation of Postmortem Specimens	2
MEDF521	Legal Medicine and the Legislative System in Turkey	2
MEDF522	Asphyxial Deaths	1
MEDF523	Forensic Gynecology	1
MEDF524	Death Related to Poisoning	1
MEDF525	Firearms Injury	1
MEDF561	Psychology and Forensic Psychiatry	4
MEDF612	Advanced Legal Medicine	4
MEDF622	Sex Related Crimes	2
MEDF624	Forensic Odontology	4
MEDF630	Forensic Pathology	4
MEDF651	Forensic Anthropology	2
MEDF652	Physical Anthropology	2
MEDF653	Paleopathology	2

#### Basic Sciences Department

This multidisciplinary degree program provides an understanding of the integration of forensic science disciplines with the investigation of criminal activity, as well as a review of analytical methods, procedures, equipment and data used by forensic specialists. A broad based learning experience in multiple areas of forensic science with teaching and research emphasis in DNA technologies, population genetics and toxicology is aimed.

Chemists, biologists, pharmacists, and graduates of different fields of engineering are trained to use their acquired knowledge in the field of forensic sciences. Believing that professional preparation must be built on an educational basis, the programs offered reflect current advances and additions to technological knowledge.

The courses instructed by the Basic Sciences Department are listed as follows:

#### Concentration in Biology

Number	Name	Credit
BIOF511	Polymer Biochemistry	2
BIOF611	DNA Analysis in Biological Samples	4
BIOF521	Metabolic Pathways and Detoxification	2
BIOF621	Biochemical Toxicology	2
BIOF531	Investigation of Blood and Bloodstains	2
BIOF532	Identification and Differentiation of Biological Evidence	3
BIOF533	Population Genetics	2
BIOF631	Practical Problems in Blood Group and Subgroup Typing	3
BIOF632	Forensic Haemogenetics	4
BIOF633	Applied Forensic Haemogenetics	2
BIOF541	Statistics for Criminalists	3
BIOF641	Advanced Statistics for Criminalists	4
BIOF642	Statistical Models for the Interpretation of Physical Evidences	2
BIOF551	Forensic Microbiology	2
BIOF561	Laboratory Analysis in Rape and Sexual Assault	2

#### Concentration in Chemistry

CHEMF511	Techniques in Criminal Investigations	2
CHEMF512	Organization and Control of Criminal Laboratories	2
CHEMF521	Organic and Inorganic Analytical Techniques	2
CHEMF522	Analytical Techniques in Forensic Chemistry	2
CHEMF523	Instrumental Analysis in Forensic Chemistry	2
CHEMF621	Mass Spectroscopy in Criminalistic Analysis	2
CHEMF622	Infrared Spectroscopy in Criminalistic Analysis	2
CHEMF531	Analytical Methods in Forensic Toxicology	2
CHEMF631	Pharmaceutic Toxicology	2
CHEMF632	Forensic Toxicology of Drugs of Abuse	2
CHEMF541	Analysis of Drugs of Abuse	2
CHEMF642	Forensic Pharmacognosy	2
CHEMF643	Doping Analysis and Control	2

#### Concentration in Physics

Number	Name	Credit
PHYS 511	Investigation of Prints and Marks	2
PHYS 512	Principles of Document Examination	2
PHYS 513	Automobile Crash Investigation	2
PHYS 612	Forensic Stylometry, Stylistics and Graphometry	2
PHYS 611	Ballistics	2

#### Social Sciences Department

Judges, lawyers and district attorneys have the opportunity to obtain a concentration of courses that are directly related to legal medicine and criminalistics in conjunction with meeting their degree requirements. Psychologists and education professionals have the chance to be trained in the Child Neglect and Child Abuse Unit of the Department.

The courses instructed by the Social Sciences Department are listed as follows:

Number	Name	Credit
SOF 511	Legal Medicine and Civil Procedure	2
SOF512	Legal Medicine and Criminal Procedure	2
SOF514	Expert Testimony in the Common Law System	2
SOF515	Interpretation of Scientific Evidence	4
SOF516	Admissibility of Evidence	2
SOF521	Sexual Offences	2
SOF522	Sexual Aberrations	2
SOF523	Child Abuse and Neglect I	4
SOF623	Child Abuse and Neglect II	4
SOF524	Legal Medicine and Ethics	2
SOF525	Psycholegal Aspects of Suicide	2
SOF526	Medical Jurisprudence	4
SOF626	Forensic Victimology	4
SOF527	Forensic Pediatrics	2
SOF528	Homicide Prosecution	2
SOF529	Correctional Psychology	2

### Admission and Placement to LEMFOS

Graduates of the faculties with a minimum of 2.5 grade point average can apply to the institute. Following an examination to reflect their general educational background the applicants are examined on their potential in scientific thought by expressing their career objectives.

Students who have been successful on the examinations mentioned are being enrolled to the appropriate departments for either a master's or Ph.D. degree, where apart from their required courses they have the chance to select any course that they find interesting. The required and elective courses for each department are selected from all available courses within the department itself and from other departments. The program core requirements for each concentration are given in Table 1.

For master's degrees the students should complete a minimum of 48 semester hours including Thesis (minimum 24 hours). The degree is awarded to students that have completed their courses and have passed an oral master's comprehensive examination adjudicated by a five membered Board of Examiners.

For Ph.D. degrees the students should complete a minimum of 48 semester hours before starting to work for a Thesis. To be able to get a thesis subject students have to take an oral Ph.D.

comprehensive examination covering all the areas of subjects taken. This exam is adjudicated by a five membered Board of Examiners. Following it, they can start a Thesis (minimum of 48 semester hours) that they must defend orally.

The graduates of the different departments have the opportunity to be established in a variety of professional areas. The Basic Sciences department graduates can be established at the Forensic Criminal Laboratories of the State Police, Ministry of Interior Affairs, the departments of chemistry, biology, and physics of the Council of Legal Medicine of the Ministry of Justice or perform independent consulting as expert witnesses for the court or defence attorneys.

The students that get a Ph.D. degree have the opportunity to start an academic career. We believe that educational institutions like LEMFOS have to be established throughout the country therefore there will be an increasing demand for lecturers and professors in the area. Our policy is to challenge students for this kind of an academic career.

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TABLE 1—Program core requirements in the Institute of Legal Medicine and Forensic Sciences.

Concentration in Biology	Concentration in Chemistry	Concentration in Physics	Concentration in Medicine	Concentration in Odontology	Concentration in Law	Concentration in Psychology
MEDF515	BIOF521	BIOF541	MEDF513	MEDF512	MEDF513	MEDF521
BIOF511	BIOF541	CHEMF511	MEDF612	MEDF513	MEDF521	MEDF561
BIOF531	CHEMF511	CHEMF522	MEDF630	MEDF521	MEDF561	SOF515
BIOF541	CHEMF522	PHYSF511	BIOF541	MEDF612	SOF515	SOF526
CHEMF511	CHEMF523	SOF514	SOF516	MEDF624	SOF516	
CHEMF522	SOF514	SOF515	SOF524	MEDF630	SOF526	
SOF514	SOF516	SOF516		BIOF541		
SOF516				SOF516		
				SOF524		