ITALY. Medical genetics curriculum

Medical genetics (open to holders of a specialised degree in Medicine and Surgery, a degree in Medicine and Surgery (former system) or a specialised degree in Biology – 5-year course).

In accordance with the national core syllabi for universities, students having specialised in Medical Genetics must have scientific and professional knowledge in the fields of Medical Genetics and Laboratory Medical Genetics and be capable of: identifying and diagnosing genetic diseases; providing useful information on the identification, control and prevention of genetic disease; assisting other specialised students in the identification, diagnosis and management of these conditions as well as understanding, using and interpreting the results of laboratory tests supporting the diagnosis of genetic disease. With a view to attaining these objectives, specialised students in Medical Genetics must have acquired theoretical, scientific and professional knowledge on the biological component of genetic, chromosomal and genic disease, as well as of complex disease with a large genetic component. Given the horizontal character of this specialisation, students must already have extensive knowledge of preparatory subjects, in particular genetics, biology, biochemistry and statistics, and develop specific knowledge in hereditary, familiar and genetic disease, including somatic mutation disease, as well as theoretical and practical knowledge in genetic counselling and in medical genetics laboratory testing in the areas of cytogenetics, molecular genetics and immunogenetics for the purpose of clinical applications in the diagnostic, prognostic and therapeutic fields.

The specific educational objectives of the course in **MEDICAL GENETICS** (5 years) are as follows:

Basic educational objectives -- Students must learn the following: basic notions regarding heredity and human disease; the theory of human and medical genetics and related diagnostic and clinical aspects, including genetic counselling and testing; advanced research on recombinant technology in the field of medical genetics; basic scientific knowledge of biochemistry, molecular biology, applied biology, pharmacology, cytology, embryology, medical statistics and general pathology; genetics and molecular components of immune response and mutagenicity;

School-specific educational objectives -- Students must already have the necessary knowledge of the following: clinical psychology, human and medical genetics, internal medicine, general surgery, neurology, paediatrics and obstetrics so as to achieve, in the various specialisation courses, full understanding of semiotics and disease diagnosis and treatment; the main hematochemical, immunohematological and clinical pathology laboratory tests, their purpose and use at clinical, diagnostic and prevention level and in the monitoring of the structures and systems involved in genetic disease; laboratory theory and practice at the basis of chromosomal, monogenic and polygenic diseases, including those caused by somatic mutation; the knowledge needed to develop, use and check the quality of genetic tests; the methods for diagnosing genetic disease by means of molecular genetics, cytogenetics and biochemistry, as well as recombinant biotechnologies, including for the purpose of assessing susceptibility to disease and response to pharmacological therapy; monitoring equipment and genic therapy equipment; and equipment technology, including automated technology, for molecular analysis and genic study.