

# Study Plan 2016 of the licentiate of medical surgery of the faculty of higher studies Iztacala

Adolfo René Méndez-Cruz<sup>1</sup>, Xavier de Jesús Novales-Castro<sup>2</sup>, Lilia Isabel Ramírez-García<sup>3</sup>, Eugenio Camarena-Ocampo<sup>4</sup>, Julia Reyes-Realí<sup>5</sup>, Uriel Calderón-Abundes<sup>6</sup> and Dante Amato<sup>2</sup>

<sup>1</sup>Head of the Undergraduate Medical Degree Program; <sup>2</sup>Curricular Development Committee; <sup>3</sup>Department of Medical Education; <sup>4</sup>Curricular Design and Evaluation Coordination; <sup>5</sup>Basic Teaching Head Office; <sup>6</sup>Undergraduate Medical Student on Social Service; Facultad de Estudios Superiores Iztacala, Universidad Nacional Autónoma de México, Tlalnepantla, Edo. de México, Mexico

## Abstract

The 2016 undergraduate medical degree curriculum at the Facultad de Estudios Superiores Iztacala of the Universidad Nacional Autónoma de México (UNAM) is presented. It is the result of a long institutional reflection and academic dialog process of approximately three years, which culminated in its approval by UNAM's Academic Council for the Biology, Chemistry, and Health Sciences areas on January 25, 2016. Its most relevant characteristics are: modular organization, four knowledge areas (biomedical, methodological, socio-psychological, and humanistic and medical practice), and new modules such as Seminar of socio-psycho-biological integration; Genetics and molecular biology; Biochemistry and cellular biology; Pharmacological basis of therapeutics; Infectious diseases, microbiology and parasitology; Medical ethics; Public health; and Evidence-based medicine – clinical epidemiology. To achieve a more flexible curriculum, optional modules were included. To make possible the curricular change, improving the teaching strategies, innovating the learning assessment methods, supporting the training and updating of the teaching staff, and establishing a curriculum development committee for following up and evaluating the program, are necessary. Curricular changes are difficult and complex processes; they suppose challenges and opportunities. It is mandatory to plan them carefully and sensitively to allow a successful transition and avoid conflicts for the students, the teachers and the institution.

**KEY WORDS:** Curriculum. Undergraduate medical education. Studies plans and programs.

## Introduction

The Undergraduate Medical Degree Program was started at the Iztacala National School of Professional Education (ENEPI – *Escuela Nacional de Estudios Profesionales Iztacala*) in 1975. The curriculum (referred to as the traditional program) was similar to that of the Faculty of Medicine of the National Autonomous University of Mexico (UNAM – *Universidad Nacional Autónoma de México*). A group of teachers of the new institution analyzed if modifying the referred curriculum was appropriate or not, and a diagnosis of the

social context was therefore considered and different national and international undergraduate medical degree curricula were reviewed. The process led to the decision to design a new curriculum, which was initiated in 1977 in two pilot groups and since 1978 was fully implemented. The curricular model was based on learning units called modules, designed to provide the students with scientific-theoretical and practical tools, which would allow for them to approach professional functions in a gradual and well grounded form<sup>1</sup>. The curriculum was submitted for approval by the corresponding university entities in two moments: the programs of basic cycle modules were approved in 1978,

### Correspondence:

Dante Amato  
Av. de los Barrios, 1  
Los Reyes Iztacala  
C.P. 54090, Tlalnepantla, Edo. de México  
E-mail: dante.amato@unam.mx

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and those of clinical cycles in 1980. Since then, the curricular map and program had not been modified as a whole, although the modules programs and contents were reviewed and updated on three occasions. On May 11, 2001, ENEPI changed its nature of School to that of a Faculty, and its name was modified into Iztacala Faculty of Higher Education (FESI – *Facultad de Estudios Superiores Iztacala*).

Since 1980, Mexico's demographic and epidemiological profiles have been modified, and pressure on the National Health System has increased. The world has experienced changes of unprecedented magnitude and depth. Therefore, the characteristics of the human resources that are trained and educated must be in concordance with those of the new setting. In recent years there has been a true transition in medical education attempting to replace old models with other more efficient ones; students have different characteristics; the leading role in education has shifted from teachers to students, and massive incorporation of new information and communication technologies forces to use them in the most efficient way. Currently, one of the main characteristics of scientific knowledge is uncertainty. The most successful professionals are not those who know more, but those who better adapt<sup>2</sup>. Medical practice has also changed. Among its most notable transformation is the shift of practice based on personal experiences and opinions to practice based on the best published evidence for diagnosis, treatment and decision making<sup>3</sup>; from the paternalistic model of the doctor-patient relationship, to a deliberative one that demands open and flexible communication with all stakeholders<sup>4</sup>; from individual practice to one of inter-professional, collaborative of groups of doctors and other member of the healthcare team<sup>5,6</sup>; and to the recommendation to use many of the available resources to diagnose and follow-up the majority of patients, to use technological advances in an efficient and sensible form. All these approaches do not only require teaching and training, but changes in the predominant conceptions and paradigms.

For the review of current curriculum, a Curricular Development Committee was created, which carried out an institutional reflection and academic dialogue process, where the pertinence of curricular modification was evaluated and agreements were reached. The entire process was supported by the FESI Curricular Design and Evaluation Coordination, an entity that also supervised that the generated documents complied with the guidelines of the UNAM Area Academic Councils Support Coordinating Unit.

The Biological, Chemical and Health Sciences Area Academic Council knew and analyzed the curriculum proposed on January 25, 2016, and agreed to approve it. Its enforcement started at 2017-1 semester (August 8, 2016).

## Structure and organization of the curriculum

A complete description of the curriculum, of the modules programs, admission, intermediate, graduation and professional profiles can be found in books I and II of the *Proyecto de modificación del plan de estudios de la licenciatura de medico cirujano*<sup>7</sup>, available at the FESI web page ([www.iztacala.unam.mx](http://www.iztacala.unam.mx)).

The new curriculum preserves the essence of the previous one, i.e., the modular organization, which was deemed as its main strength. In addition, weaknesses were corrected by means of enriching contributions of new mandatory and optional modules.

The FESI Undergraduate Medical Degree Curriculum has a duration of 6 years, distributed in 12 semesters, with a total of 40 modules, 37 of them mandatory and three optional, with a total of 442 credits, 430 of them mandatory and 12 optional, and academic program of 6240 hours. It has two learning stages: basic and clinical. The clinical stage includes the comprehensive clinical modules and the undergraduate rotating internship (Table 1).

There are ten cycles in the curricular map: the first four are basic and the next six are clinical. In cycles I to IV there are biomedical, socio-psychological-humanistic, research methodology and clinical practice modules. Biomedical modules include the systems modules and others of new creation such as "Pharmacological bases of therapeutics", "Biochemistry and cell biology", "Genetics and molecular biology" and "Infectious diseases and medical microbiology and parasitology". The socio-psychological and humanistic modules incorporate the "Socio-psychobiological integration seminars", "Medical Ethics" and "Public Health". Previous curriculum "Instrumentation" and "Laboratories" modules were transformed into "research methods I to V". The clinical practice modules were preserved similar to those of previous curriculum. In addition, three optional modules have to be completed during the first four cycles.

The clinical stage includes the "Comprehensive clinic I to IV" and "Clinical epidemiology and evidence-based medicine I and II" modules, and the undergraduate rotating internship, with two-semester duration.

There are two serialization moments: at the first one, the totality of first stage modules (basic cycles) have to be covered in order to be able to take the second stage (clinical cycles); at the second one, in order to be admitted to the undergraduate rotating internship (cycles IX and X), the student must have approved all cycle V to VIII modules (Table 1).

Social service is performed at undergraduate internship completion. It lasts one year, has no credit value and is a mandatory requirement for graduation. It is regarded as a professionalization space, since it directly puts the student in touch with the population healthcare needs and favors the training for real individual and collective health problems solution. There is also the option to carry out social service in the fields of teaching or research, or both, through university and collaborative programs.

### **Training stages and graduation profile**

The basic stage comprises cycles I through IV; upon completion, the students are evaluated to find out if they have the characteristics established for intermediate profile I. The clinical stage includes cycles V to VIII, at the completion of which, the students are evaluated to find out if they achieved intermediate profile II and undergraduate rotating internship characteristics, where increasing importance is given to practice, as opposed to theory. The students learn by practicing, under the supervision of teachers. Internship comprises six bimonthly rotations across the areas of obstetrics & gynecology, general surgery, internal medicine, pediatrics, family, preventive and community medicine, and medical-surgical emergencies; at its conclusion, achievement of the graduation profile is evaluated.

The graduation profile consists of seven domains that account for abilities, skills, attitudes and knowledge of the future professional:

- Critical thought, clinical judgment, decision making and information management, clinical knowledge and its application.
- Methodological and instrumental capability in science and humanities.
- Self-regulated and permanent learning of medical-scientific bases.
- Effective and human communication.
- Ethical and professional command on medical practice.
- Capability of professional development and growth.

- Participation in community-based care, health systems and public health.

To integrate the graduate profile, the Curricular Development Committee took into special consideration the profiles proposed by the Mexican Association of Medical Faculties and Schools<sup>8</sup> and by the UNAM Faculty of Medicine<sup>9</sup>.

### **Socio-psychobiological integration seminar**

The “Socio-psychobiological integration seminar” is an innovative proposal, the purpose of which is to help the students to integrate and correlate the contents, knowledge, abilities and skills of the modules of the cycle that is being taken with those of other related disciplines. Its importance lies in that, by offering them a space for work and discussion in small groups, with the guidance and orientation of their teachers, the participants will be able to consolidate their training processes and advance in the construction of their own knowledge during the basic cycles. It is thought as a space for health problem-solving, mainly in the form of cases, where the interest focuses on the process students follow, and not only on the outcome. Integration does not only refer to basic-clinical aspects, but also to the current necessity to integrate other disciplines in order to incorporate social and psychological determinants of the health-disease process, as elements that are not exclusive to the field of study of natural sciences and that cast some light to understand health problems at their entire magnitude<sup>10,11</sup>. Integration capability is an ability that is acquired with practice, and the exercises to be developed in the “Socio-psychobiological integration seminar” throughout the first four semesters should therefore not be regarded as repetition, but as an iterative training process that will enable students to progressively address the solution of problems with growing complexity, just as experts do.

### **Implementation and assessment of the curriculum**

The curriculum started operating in August 2016. The implementation process required for new trends in medical education to be incorporated, including a change from the focus centered on teaching towards one centered on learning, collaborative learning encouragement, creation of new educational materials and update of the existing ones, use of information

Table 1. UNAM FESI 2016 Curriculum curricular map for the Doctor Surgeon Degree Program

FES Iztacala-UNAM undergraduate medical degree 2016 curricular map				
Stage 1: Basic cycles* (1 <sup>st</sup> to 4 <sup>th</sup> semester)				
Cycle I	Cycle II	Cycle III	Cycle IV	
Cardiovascular s. M. 6/0 6 12	Urinary s. M. 3/0 6	Digestive s. M. 6/0 12	Nervous s. M. 6/0 12	
Hematologic s. M. 3/0 6	Reproductive s. M. 5/0 10	Endocrine s. M. 5/0 10	Osteomyoarticular s. M. 5/0 10	
Respiratory s. M. 6/0 12	Genetics and molecular biology M. 3/1 7	Immune s. M. 3/0 6	Integumentary s. M. 3/0 6	
Biochemistry and cell biology M. 2/1 5	Public health M. 3/3 9	Infectious diseases, microbiology and medical parasitology M. 2/1 5	Pharmacological bases of therapeutics M. 4/0 8	
Investigation methods I M. 1/5 7	Investigation methods II M. 1/5 7	Investigation methods III M. 1/5 7	Investigation methods IV M. 1/5 7	
Socio-psycho-biological integration seminars I M. 1/3 5	Socio-psycho-biological integration seminars II M. 1/3 5	Socio-psycho-biological integration seminars III M. 1/3 5	Socio-psycho-biological integration seminars IV M. 1/3 5	
Clinical practice I M. 1/5 7	Clinical practice II M. 1/5 7	Clinical practice III M. 1/5 7	Clinical practice IV M. 1/5 7	
Optional† 2/0 4	Optional 2/0 4	Medical ethics M. 1/2 4	Optional 2/0 4	

  

Stage 2: Clinical cycles* (5 <sup>th</sup> to 10 <sup>th</sup> semester)				
Cycle V	Cycle VI	Cycle VII	Cycle VIII	Cycle IX
Comprehensive clinic I M. 0/24 24	Comprehensive clinic II M. 0/24 24	Comprehensive clinic III M. 0/35 35	Comprehensive clinic IV M. 0/35 35	Undergraduate rotating internship M. 2/38 84
Clinical epidemiology EBM I M. 2/2 6	Clinical epidemiology EBM II M. 2/2 6			
<p><b>Optional modules</b></p> <p>Additions M. Medical anthropology M. Stem cells and cancer M. Control and management of the patient with diabetes mellitus 2 M. Human development M. Formation of teams for inter-professional practice M. Medicine administrative management M. History of the doctor-patient relationship M. History and philosophy of medicine M. Biomarker identification and molecular diagnosis M. Microscopy of normal and pathologic tissues and organs M</p>				
<p><b>Undergraduate rotating internship</b></p> <p>Rotations through: Obstetrics and gynecology General surgery Internal medicine Pediatrics Family, preventive and community-based medicine Medical-surgical emergencies</p>				
<p>Social medicine M. Neurosciences M. Legal regulations in medicine M. Clinical nutrition M. Literary perspectives of medicine M. Medical psychology M. Human sexuality M. Thanatology M. Diagnostic techniques in infectology M.</p>				
<p>Biomedical area</p> <p>Methodological area</p> <p>Socio-psychological and humanistic area</p> <p>Medical practice area</p> <p>Optional</p>				
<p>Academic program: 6240 Total credits: 442 Total modules: 40 Mandatory: 37 Optional: 3</p>				

\*Modules integrating cycles I-IV can be completed in an unspecified sequence. M: Modules; s: System. Each cycle is completed in an academic semester.

†Clinical cycles can be completed in an unspecified sequence. When starting with Comprehensive Clinic I, the sequence is consecutive (I through IV); in case of starting with Comprehensive Clinic II, the sequence is II, I, IV and III, etc. For further details see section 3.4.4.

‡Table of modules by semester of the modification proposal.

§Optional modules can be of any domain area.

and communication technologies, and different educational activities and teaching-learning strategies.

The process of continuous improvement should be based on permanent evaluation of curricular goals, competence profiles and quality of education, in accordance with the extent and depth of the contents proposed in the curriculum.

Curricular transition processes are long and difficult. Those in charge for implementing them must face resistance to change and logistic challenges with efficacy and sensitivity, without failing to take into account the existing teaching staff and available resources. The design of the curriculum and of each one of the modules programs is highly important, but the importance of the required activities to implement the new curriculum is even higher. A smooth and ordered transition is required in order to obtain optimal results, to the benefit of the future doctors and the society they will serve to.

This curricular modification is expected to improve the capability of graduates to provide primary care to the most common health needs of the Mexican population, from the preventive, curative and rehabilitating points of view; to contribute to increase their professional quality; to improve their performance in the assessments they undergo to compete for work or training posts in Mexico or abroad; to prepare them for self-directed learning throughout the rest of their

professional life; and to allow their insertion in health, educational or other services, in order to continue with their medical practice.

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