THE TUNING MATRIX

Degree Program in Medicine and Surgery
University of Rome Tor Vergata

Within the framework of the Degree Program in Medicine and Surgery at the University of Rome Tor Vergata, the Tuning Matrix constitutes a structured and transparent tool for defining, organizing, and assessing learning outcomes and competences, in accordance with European standards for medical education.

The Tuning Matrix represents the operational synthesis of the core principles of “Tuning Educational Structures in Europe”, an educational innovation and quality-enhancement project initiated by European universities and subsequently adopted by several institutions in Asia and the United States.

The primary objective of this methodology is to make degree programs comparable, compatible, and transparent through two main instruments: learning outcomes and competences.

The expected learning outcomes define what a student is expected to know, to be able to apply, and to demonstrate at the end of the educational pathway undertaken. They are formulated through precise definitions that clearly describe what a student will be able to do, in a form that is assessable and measurable.

Learning outcomes are expressed in terms of levels of competence, modulated across the three cycles of higher education (Bachelor’s degree, Master’s degree, and postgraduate/specialization programs), while competences result from a dynamic combination of cognitive and practical elements.

All teaching units and courses contribute to the development of competences, which are regularly assessed within the degree program. Some competences are specific to individual disciplinary areas, while others are general and transferable.

Structure of the Tuning Matrix

The Tuning Matrix is developed according to the following structure:

Rows

The rows of the matrix are constructed by incorporating the elements already defined in the SUA-CdS, starting from the Dublin Descriptors as identified in sections A4.b.2 and A4.c.

Under each competence (defined through the five Dublin Descriptors), the corresponding learning outcomes are listed, which progressively guide the student toward the achievement of that competence.

Columns
The columns contain the individual courses/modules, indicating for each of them the learning outcomes that contribute to the development of the specified competences.

The Dublin Descriptors

The Dublin Descriptors constitute a system shared at the European level for the description of general and transversal competences considered essential for graduates' integration into the professional world.

Through these descriptors, it has been possible to define a European standard that allows for the comparison of learning outcomes across similar degree programs, while fully respecting the specific characteristics of individual educational projects.

Knowledge and Understanding (Dublin Descriptor 1 – A4.b.2)	Chemistry and Introductory Biochemistry	Physics and Statistics	Histology and Embryology	Biology and Genetics	Human Anatomy I	Human Anatomy II	Immunology and Immunopathology	Biochemistry	Physiology	Microbiology	Scientific Writing and Research Communication	Clinical Symptomatology	Laboratory Medicine	General Pathology and Pathophysiology	Human Sciences	Systematic Pathology I	Anatomic Pathology	Public Health	Pharmacology	Systematic Pathology II	Systematic Pathology III	Diagnostic Imaging and Radiotherapy	Diseases of the Muscoloskeletal System	Neurological Sciences	Psychiatry	Obstetrics and Gynecology	Pediatric Sciences	Internal Medicine and Medical Genetics	General Surgery	Specialistic Disciplines	Dermatology and Plastic Surgery	Forensic Medicine	Emergency	Clinical Practice I-VI	Medical Practice with Evaluation
Knowledge of the fundamental concepts involved in applying the Scientific Method to the study of biomedical phenomena, using appropriate mathematical tools.		X																																	
Knowledge of the scientific foundations of medical procedures and of the operating principles of the instruments used in diagnostic and therapeutic practice.		X																																	
Knowledge of the English language sufficient to understand general informational texts and simple spoken language.																																			

Knowledge of the morphofunctional organization of the different cell types and tissues, and of human embryonic development.			X	X					X																						X	
Knowledge of the fundamental functional aspects of organism activity at different levels of increasing integration: molecular, cellular, organ, and system levels.				X					X																							
Knowledge of the morphological and functional organization of the musculoskeletal, cardiovascular, lymphatic, respiratory, integumentary, endocrine, digestive, urogenital, and nervous systems.					X	X			X																						X	
Knowledge of the development of medical science from the beginnings of Western civilization to the present, including the humanistic foundations on which it is based.														X																			

Knowledge of the general characteristics of chemical and bioenergetic reactions, the chemical properties of the components of living matter and biological macromolecules, enzymes, the structure and mechanisms of nucleic acid replication, and the mechanisms of protein synthesis.	X							X												X											X		
Knowledge of the main metabolic pathways, the molecular mechanisms regulating cellular activity, and the biochemical principles of nutrition.								X	X																						X		
Knowledge of the mechanisms controlling gene expression and the principles of inheritance, as well as of cellular differentiation, motility, and cell death.			X	X																											X		
Knowledge of the cellular and molecular bases of microbial pathogenicity, microorganism–host interactions, and biotechnologies applied to bacteriology, virology, mycology, and parasitology.										X			X	X																	X		

Knowledge of the fundamentals of the immune system.							X						X																				X		
Knowledge of the etiopathogenesis of diseases and of the process of neoplastic transformation.													X																						
Knowledge of the basic concepts of the main diseases of pulmonology interest and of the instrumental and clinical investigations required for their diagnosis and treatment.												X			X																		X	X
Knowledge of the mechanisms of action of drugs and their applications.																		X																	
Knowledge of the biological and pathophysiological mechanisms underlying the main diseases of the heart, arteries, and veins.													X		X																		X	X
Knowledge of the main diseases of the kidneys and urinary tract and of the therapeutic approaches used in medical nephropathies and renal failure.												X							X														X	X

Knowledge of the principles underlying the assessment of the functional status of organs and tissues through laboratory investigations performed on biological samples, body fluids, and biopsies, or directly on the patient, as well as of laboratory methods useful for the diagnosis of infectious diseases.													X																			X		
Knowledge of diseases of the musculoskeletal system.																						X											X	X	
Knowledge of the epidemiological, etiopathogenetic, morphological, phenotypic, molecular, and clinicopathological characteristics of the most important neoplastic and non-neoplastic diseases (inflammatory, ischemic, and degenerative).																	X																X	X	
Knowledge of the main rheumatic diseases, the principal diseases of the blood and the hemolymphopoietic system (both neoplastic and non-neoplastic), as well as the major immune-mediated diseases.																				X													X	X	

Knowledge of the biomolecular bases regulating hormonal secretion and endocrine gland growth, as well as the pathophysiological, diagnostic, and therapeutic foundations of the main endocrine and metabolic diseases.																				X														X	X
Knowledge of the epidemiology, pathophysiology, clinical presentations, and diagnostic pathways of diseases of the esophagus, stomach, small intestine, and colon, as well as hepatobiliary and pancreatic diseases.																					X		X										X	X
Knowledge of the physiological bases of the nervous system and of the essential elements required to diagnose and treat the main diseases of the central and peripheral nervous systems. Knowledge of neuroradiology in both its diagnostic and therapeutic–interventional aspects.																																			

Knowledge of the diagnostic elements and treatment of the most common dermatological diseases of inflammatory, infectious, and parasitic origin, as well as precancerous conditions and malignant cutaneous and mucosal neoplasms, and sexually transmitted diseases.																													X			X	X
Essential knowledge to identify the etiology, epidemiology, clinical presentation, diagnosis, and treatment of infectious and tropical diseases.																					X											X	X
Knowledge of the most appropriate diagnostic imaging investigations based on clinical suspicion, within conventional and breast radiology, vascular/ interventional radiology, computed tomography, magnetic resonance imaging, ultrasonography, and nuclear medicine.																						X										X	X

Knowledge of healthcare legislation, thanatology, toxicology, social medicine, and of occupational risk factors and work-related diseases.																													X			X
Knowledge of the etiopathogenesis, molecular bases, epidemiology, diagnosis, and treatment (pharmacological, radiotherapeutic, and surgical), as well as screening programs for the main neoplasms.													X							X						X	X			X	X
Knowledge of the pathophysiology of aging in order to appropriately manage elderly patients.													X												X						X	X
Knowledge of the main pediatric diseases and their therapeutic interventions.																								X							X	X
Knowledge of the main psychiatric disorders and the foundations for appropriate pharmacological therapy.																	X						X								X	X
Knowledge of the main diseases of the respiratory, gastrointestinal, and genitourinary systems in pediatric patients.																									X						X	X

Knowledge of diagnostic and surgical techniques as described in international nomenclature.																				X											X	X
Knowledge of the main cardiac surgical and interventional techniques for the treatment of major congenital and acquired heart diseases.															X																X	X
Knowledge of the essential pathogenetic and therapeutic elements of the main primary and secondary diseases and syndromes involving the thoracopulmonary system from a surgical perspective.															X																X	X
Knowledge of the main vascular and endovascular surgical techniques for the treatment of the principal diseases of arteries and veins															X																	X
Knowledge of an appropriate methodological approach to primary and secondary urological and andrological diseases for their diagnosis and treatment.																		X												X	X

Knowledge of diagnostic and surgical techniques for an appropriate surgical approach in medical practice and for follow-up in oncological pathology, with awareness of the functional consequences that surgical interventions may entail.																					X						X	X					X
Knowledge of the treatment of burns and their outcomes; of malformations of the craniofacial region from both functional and aesthetic perspectives; and of the applied principles of plastic, reconstructive, and aesthetic surgery.																														X			X	X
Knowledge of the treatment of the most common dermatological conditions of inflammatory, infectious, and parasitic origin, including precancerous conditions, malignant cutaneous and mucosal neoplasms, and sexually transmitted diseases.																X														X			X	X

Knowledge of the most common surgical conditions in early and middle childhood, including the ability to apply clinical reasoning leading to diagnosis, with appropriate use of the most common instrumental investigations, and knowledge of the surgical procedures for correcting these conditions using both traditional techniques and modern minimally invasive surgical equipment.																										X							X	X			
Knowledge of the physiological mechanisms underlying sound wave transmission and perception, and of the pathophysiology and the principles of diagnosis and treatment of the main otological diseases.																													X				X	X			
Knowledge of the main otorhinolaryngological diseases of both pediatric and adult age, of otorhinolaryngological disorders occurring in systemic diseases and of the craniofacial district, and of their medical and surgical treatment.																													X				X	X			

Knowledge of the main diseases of the visual system in both pediatric and adult age, of ocular alterations occurring in systemic diseases and in the craniofacial district, and of ocular semiology.																											X				X	X
Clinical knowledge and treatment of the main inflammatory diseases of the dental elements (caries, pulpitis) and of tooth-supporting structures (periodontitis), of the principal traumatic conditions of the teeth and the maxillofacial region, and of precancerous and neoplastic diseases of the dental elements and the oral mucosa.																											X				X	X
Knowledge of the characteristics of normal pregnancy and physiological childbirth, the main maternal–fetal pathological conditions, the foundations of reproductive function and its principal disorders, the main diseases of the female reproductive system, and the oncological conditions of the female genital tract.																									X						X	X

Knowledge of the fundamentals of general and regional anesthesia, including indications, relative and absolute risks, and safety levels of the different anesthesiological techniques, as well as the neurophysiopathological and classificatory bases of pain and its treatment, including socio-clinical aspects.																															X	X	X
Knowledge of the principles of critical patient management (intensive care), as well as of brain death determination and organ donation.																															X	X	X
Knowledge of the clinical methodology used to evaluate the clinical and radiographic features of diseases and trauma of the facial skeleton, to identify true emergencies based on physical examination, and of the main therapeutic approaches to facial bone fractures, orbital hematomas, and facial wounds.																													X				X	X

Applying Knowledge and Understanding (Dublin Descriptor 2 – A4.b.2)	Chemistry and Introductory Biochemistry	Physics and Statistics	Histology and Embryology	Biology and Genetics	Human Anatomy I	Human Anatomy II	Immunology and Immunopathology	Biochemistry	Physiology	Microbiology	Scientific Writing and Research Communication	Clinical Symptomatology	Laboratory Medicine	General Pathology and Pathophysiology	Human Sciences	Systematic Pathology I	Anatomic Pathology	Public Health	Pharmacology	Systematic Pathology II	Systematic Pathology III	Diagnostic Imaging and Radiotherapy	Diseases of the Muscoloskeletal System	Neurological Sciences	Psychiatry	Obstetrics and Gynecology	Pediatric Sciences	Internal Medicine and Medical Genetics	General Surgery	Specialistic Disciplines	Dermatology and Plastic Surgery	Forensic Medicine	Emergency	Clinical Practice I-VI	Medical Practice with Evaluation
Be familiar with histochemical and immunohistochemical techniques for the study of cellular and subcellular structures using light microscopy.			X																															X	
Be able to recognize the morphological features that allow identification of the various human tissues, enabling organ-level diagnosis.			X													X																		X	
Be able to describe the human body in its three-dimensional, topographical, and functional relationships, including superficial body structures and the surface projection of deep organs.					X	X			X																										

Be able to describe the function of the different body systems and the main techniques used for functional assessment.									X																							
Be able to recognize the strengths and limitations of the main techniques in cellular and molecular biology.				X				X																							X	
Be able to identify the elements of a gene within a DNA sequence and to consult the main online databases of molecular genetics.								X																								
Be able to evaluate the diagnostic and clinical aspects of microbiological and virological analyses.										X			X																		X	
Be able to recognize microscopic morphological alterations of cells and tissues caused by disease processes and by the fundamental defensive reactions against pathogenic agents.														X			X														X	
Be able to describe and interpret the pathological features of a specimen by relating them to the specific etiopathogenetic mechanism.																	X														X	

Know the diagnostic limitations and potential of histopathological investigation.																X															X		
Be able to understand the underlying reasons for the signs and symptoms of disease processes and possess the foundations for a clinical practice based on objective findings.														X		X				X	X				X						X	X	
Possess the preparation necessary to obtain a medical history, perform a physical examination, and achieve an initial clinical orientation regarding the patient's pathological conditions.																X				X	X		X	X	X			X	X	X	X	X	
Be able to discuss surgical or endoscopic approaches to deep organs and recognize the relationships among normal organs in diagnostic imaging.																											X				X	X	
Be able to describe the effects of the main lesions of the central and peripheral nervous systems and the sites of referred pain.																										X							

Be able to recognize the type of pathology by evaluating symptoms, clinical signs, laboratory tests, and instrumental investigations.													X			X					X	X	X	X	X	X	X	X		X	X	X
Be able to correctly approach the patient from a clinical perspective with regard to physical examination, demonstrating the ability to independently assess different body systems.																X					X	X	X	X	X	X	X	X		X	X	X
Be able to apply diagnostic methods for establishing a diagnosis and for selecting appropriate medical, surgical, and interventional therapeutic strategies.																															X	X
Be able to apply preventive measures and differential diagnostic approaches, and to hypothesize the clinical course and possible complications of the main medical conditions.																															X	X
Be able to prescribe appropriate therapy for the treatment of the main medical conditions.																												X			X	X

Be able to prescribe appropriate therapy for the treatment of the main medical conditions.																							X							X	X
Be able to recognize the type of surgical pathology by evaluating symptoms, clinical signs, laboratory tests, and instrumental investigations.											X				X				X						X			X		X	X	X
Be able to appropriately approach the surgical patient in order to develop the most effective diagnostic and therapeutic pathway.											X				X				X						X	X		X		X	X	V
Be able to apply sterility protocols in the operating room, recognize the main surgical instruments, perform postoperative antithrombotic prophylaxis, dress a wound, and remove a surgical suture.															X											X	X			X	X	X
Be able to perform a surgical suture, use and interpret imaging studies, and possess learning abilities that allow an initial clinical orientation in emergency and urgent care settings.																				X						X				X	X	X

Acquire an understanding of the therapeutic indications for the main conditions of surgical interest.																X															X	X	X
Have the ability to obtain a medical history and perform a physical examination in outpatient and home-care settings.												X											X				X		x				X
Implement best practices in the doctor–patient relationship, including communication, rapport, information sharing, clarity, and obtaining informed consent.												X				X		X			X		X	X		X	X	X	X	X			X	X
Know and be able to apply clinical reasoning, including the ability to identify priority or urgent problems and secondary issues, to propose diagnostic hypotheses, and to select diagnostic investigations with the highest sensitivity and specificity to confirm or refute those hypotheses.												X				X		X			X		X	X	X	X	X	X	X		X			X	X
Be able to interpret laboratory test results.													X																					X	
Be able to interpret diagnostic imaging reports.																					X													X	X

Be able to orient oneself within decision-making processes related to pharmacological and non-pharmacological treatments.																					X	X	X		X	X	X				X	X	X
Be able to complete the hospital admission/ discharge report and to write a discharge summary.												X				X		X			X				X	X	X	X		X			X	X
Be able to assess the appropriateness of hospital admission and to indicate rehabilitation pathways or protected care placement in other facilities.												X				X		X			X	X	X	X	X	X	X			X		X	X	X
Demonstrate the ability to frame the reason for hospitalization within the overall context of the patient's critical issues, comorbidities, and vulnerabilities.												X				X		X			X		X	X	X	X	X			X		X	X	X
Be able to indicate preventive actions and health education measures.																		X															X	
Demonstrate knowledge and awareness of the organization of the National Health Service and the Regional Health Service.																		X																

Respect shift start and end times, dress appropriately for the role, and carry all necessary equipment.																																	X	X
Demonstrate knowledge and awareness of the rules of the ward (or outpatient clinic).																																	X	X
Interact appropriately with medical, nursing, and technical staff of the ward.																																	X	X
Demonstrate knowledge and awareness of the different roles and responsibilities of the members of the healthcare team.																																	X	X
Demonstrate an active attitude by asking questions and volunteering to perform tasks.																																	X	X
Know and be able to apply clinical reasoning by identifying the reasons for seeking care and determining the nature and priority of the problem.																																	X	X
Be able to assess urgent conditions and identify the need for hospital admission.																																X	X	X

Know and be able to apply clinical reasoning, identifying the reasons for seeking care and determining the nature and priority of the problem.																																X	X
Be able to assess urgent conditions and identify the need for hospital admission.																						X			X	X	X	X	X			X	X	X
Be able to propose diagnostic hypotheses and identify first-line diagnostic tests with the highest sensitivity and specificity to confirm or refute those hypotheses.																						X			X	X	X	X	X			X	X	X
Be able to navigate decision-making processes related to prescribing appropriate treatment and requesting specialist consultation.														X																		X	X
Be able to assess patient adherence to therapy and to plan monitoring and follow-up.																						X			X	X	X	X	X			X	X	X
Know the issues related to the management of chronic patients with comorbidities receiving polypharmacological therapy.																						X			X	X	X	X	X			X	X	X

Demonstrate knowledge of the organization of the National and Regional Health Services and of the main bureaucratic and prescribing regulations.																	X														X	X
Be able to use the electronic medical record and demonstrate knowledge of the information systems of the National and Regional Health Services.																					X			X	X	X	X	X		X	X	X
Be able to indicate preventive actions, health promotion measures, and appropriate healthy lifestyles.																	X														X	X
Respect shift start and end times, dress appropriately for the role, and bring all necessary equipment.																															X	X
Demonstrate knowledge and awareness of the organizational rules and operational functioning of the medical practice.																																X
Interact appropriately with the administrative and nursing staff of the general practitioner’s office.																																X
Demonstrate an active and collaborative attitude by asking questions and volunteering to perform tasks.																															X	X

Making Judgements (Dublin Descriptor 3 – A4.c)	Chemistry and Introductory Biochemistry	Physics and Statistics	Histology and Embryology	Biology and Genetics	Human Anatomy I	Human Anatomy II	Immunology and Immunopathology	Biochemistry	Physiology	Microbiology	Scientific Writing and Research Communication	Clinical Symptomatology	Laboratory Medicine	General Pathology and Pathophysiology	Human Sciences	Systematic Pathology I	Anatomic Pathology	Public Health	Pharmacology	Systematic Pathology II	Systematic Pathology III	Diagnostic Imaging and Radiotherapy	Diseases of the Muscoloskeletal System	Neurological Sciences	Psychiatry	Obstetrics and Gynecology	Pediatric Sciences	Internal Medicine and Medical Genetics	General Surgery	Specialistic Disciplines	Dermatology and Plastic Surgery	Forensic Medicine	Emergency	Clinical Practice I-VI	Medical Practice with Evaluation
Graduates must demonstrate the ability to integrate knowledge and manage complexity, as well as to formulate judgments based on limited or incomplete information, including reflection on the social and ethical responsibilities associated with the application of their knowledge and judgments.																																		
To this end, graduates will be able to:																																		

Demonstrate, in the performance of professional activities, a critical approach, constructive skepticism, and a research-oriented creative attitude. Graduates will be able to consider both the importance and the limitations of evidence-based scientific thinking, informed by information obtained from multiple sources, in determining the cause, treatment, and prevention of diseases.																																X	X
Appropriately and consistently implement good communication guidelines in accordance with clinical situations, including the SPIKES protocol for breaking bad news and the CONES protocol for communicating errors.																																X	X
Formulate independent judgments to solve analytical and complex problems and autonomously seek scientific information, without waiting for it to be provided, using the principles of evidence-based medicine			X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Formulate hypotheses, collect and critically evaluate data to solve problems, with awareness of the roles of complexity, uncertainty, and probability in decisions made during medical practice. Graduates will be able to plan effectively and manage their time and activities efficiently in order to cope with conditions of uncertainty and to exercise adaptability to change.												X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Exercise personal responsibility in the care of individual patients, in accordance with the ethical code of the medical profession.												X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Engage in reflective thinking about one's professional activity, including relationships with patients and other professionals, the methods employed, the outcomes achieved, and one's personal and emotional experiences.												X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Recognize resource needs and limitations, evaluate appropriate allocation and prioritization strategies, propose new perspectives, and consider their implications in the definition of objectives.																																X	X
Plan and set objectives for innovation and meaningful change by using appropriate and applicable change management strategies in healthcare.												X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Table 1

Communication Skills (Dublin Descriptor 4 – A4.c)	Chemistry and Introductory Biochemistry	Physics and Statistics	Histology and Embryology	Biology and Genetics	Human Anatomy I	Human Anatomy II	Immunology and Immunopathology	Biochemistry	Physiology	Microbiology	Scientific Writing and Research Communication	Clinical Symptomatology	Laboratory Medicine	General Pathology and Pathophysiology	Human Sciences	Systematic Pathology I	Anatomic Pathology	Public Health	Pharmacology	Systematic Pathology II	Systematic Pathology III	Diagnostic Imaging and Radiotherapy	Diseases of the Muscoloskeletal System	Neurological Sciences	Psychiatry	Obstetrics and Gynecology	Pediatric Sciences	Internal Medicine and Medical Genetics	General Surgery	Specialistic Disciplines	Dermatology and Plastic Surgery	Forensic Medicine	Emergency	Clinical Practice I-VI	Medical Practice with Evaluation
Listen attentively in order to extract and synthesize relevant information across all issues, understanding their content, and exercise communication skills to facilitate understanding with patients and their relatives, enabling them to share in decision-making as equal partners.										X		X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Demonstrate aptitude and ability for teamwork among students, including interprofessional collaboration.																																	X	X

Demonstrate sensitivity to cultural and personal factors that enhance interactions with patients and the community, reflecting on collaborative dynamics with the community and other stakeholders																														X	X
Demonstrate, through simulation, how to manage critical communication situations, such as communicating serious diagnoses, discussing sensitive issues related to sexual and reproductive life, and addressing end-of-life decisions									X							X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Demonstrate effective and trusting collaboration with patients and their personal support networks, taking into account patient diversity and responding to different perceptions of illness.																X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Demonstrate effective and trusting collaboration and effective communication with members of multidisciplinary and interprofessional teams to optimize patient care.																X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Demonstrate effective communication with members of the community and other stakeholders, using methods appropriate to different audiences and being able to use effectively the various available means of communication, including telematic and digital tools																																X		X	X
Demonstrate active listening skills, taking into account patient diversity and responding to different perceptions of illness; engage in shared decision-making with patients and their families																X	X		X	X	X	X	X	X	X	X	X	X	X	X			X	X
Use different methods and tools of scientific communication, including written, verbal, and technological means, taking into account their context and purpose; identify the context in which specific information has been created and disseminated, and critically evaluate the quality, credibility, reliability, and relevance of information and its sources.	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Recognize and manage one's own emotions in caring for others, make sound decisions, act ethically and responsibly, and develop positive social relationships while avoiding negative behaviors.	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Table 1

Learning Skills (Dublin Descriptor 5 – A4.c)	Chemistry and Introductory Biochemistry	Physics and Statistics	Histology and Embryology	Biology and Genetics	Human Anatomy I	Human Anatomy II	Immunology and Immunopathology	Biochemistry	Physiology	Microbiology	Scientific Writing and Research Communication	Clinical Symptomatology	Laboratory Medicine	General Pathology and Pathophysiology	Human Sciences	Systematic Pathology I	Anatomic Pathology	Public Health	Pharmacology	Systematic Pathology II	Systematic Pathology III	Diagnostic Imaging and Radiotherapy	Diseases of the Muscoloskeletal System	Neurological Sciences	Psychiatry	Obstetrics and Gynecology	Pediatric Sciences	Internal Medicine and Medical Genetics	General Surgery	Specialistic Disciplines	Dermatology and Plastic Surgery	Forensic Medicine	Emergency	Clinical Practice I-VI	Medical Practice with Evaluation
Demonstrate knowledge and understanding of the human sciences, and the ability to reflect on and discuss their influence on medical practice												X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Collect, organize, and critically interpret new scientific knowledge and health/ biomedical information from different sources and available databases.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Obtain patient-specific information from clinical data management systems, using information and communication technologies as valid support for diagnostic, therapeutic, and preventive practices, as well as for health surveillance and monitoring, while understanding both the applications and the limitations of information technology.												X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Identify one's own learning needs, including through audit activities of one's student career, and design self-directed learning pathways.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Propose and design a research project by selecting appropriate strategies, methods, and resources to address a specific medical question; identify and critically appraise information for evidence-based medical practice; recognize relevant bioethical issues in medical research and propose measures to ensure scientific integrity.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Critically assess one's own level of training, recognize its limitations, and reflect on learning and professional development needs.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Apply appropriate learning strategies to meet professional development needs, including goal setting, planning, and time management for self-directed learning; use available resources to search for, identify, and select health-related information, and critically evaluate content and sources.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Demonstrate the ability to navigate professional network dynamics and to be ready to develop new competencies in response to gaps in one's professional context, in relation to the needs of the network.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X