

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	Scientific Writing and Research Communication	Italian language Competencies	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 Musculoskeletal 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			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.	X																																							

Making Judgements (Dublin Descriptor 3 – A4.c)

<p>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.</p>	X																																	
<p>To this end, graduates will be able to:</p>																																		

<p>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.</p>	X																																		X	X	
<p>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.</p>																																				X	X
<p>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</p>				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	

Making Judgements (Dublin Descriptor 3 – A4.c)

<p>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.</p>	X																																	
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<p>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.</p>																																					X	X
<p>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</p>				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

Communicati on Skills (Dublin Descriptor 4 – A4.c)	Chemistry and Introductory Biochemistry	Scientific Writing and Research Communication	Italian language Competencies	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

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
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Table 1

Learning Skills (Dublin Descriptor 5 – A4.c)	Chemistry and Introductory Biochemistry	Scientific Writing and Research Communication	Italian language Competencies	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 Musculoskeletal 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	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	X	X

<p>Critically assess one's own level of training, recognize its limitations, and reflect on learning and professional development needs.</p>	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
<p>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.</p>	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
<p>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.</p>	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