



UNIVERSITÀ
POLITECNICA
DELLE MARCHE

Master Degree in
Medicine and Surgery (LM 41)
Study Plan
Academic Year 2023/2024

The training activities (teachings, laboratories, internship, vocational training activities, final exam) are measured in credits that document the student's commitment in carrying out the activity itself. Each credit corresponds to 25 hours of overall commitment for the student, between participation in teaching activities and personal study. In the activity plan formative, shown below and visible on the Faculty of Medicine and Surgery website (www.med.univpm.it), the number is indicated of the credits attributed to each individual activity.

The Degree Course is organized into three types of training activities: basic activities; characterizing activities; related activities or integrative.

The courses included in the aforementioned activities are offered through ex cathedra lessons. To these is added, which one activities of your choice, a wide range of monographic courses and forums on topics related to the subjects covered. Among other activities is also including knowledge of a foreign language.

Lessons and laboratory activities take place at the Faculty of Medicine and Surgery; training activity vocational training, the Practical Evaluation Internship and the internship are carried out in the affiliated structures under the supervision of medical personnel identified as tutor/ referent.

The aim of the course is to integrate the classic medical training path with transdisciplinary skills common to the medical training and the biomedical engineering path and to train a doctor who is not only an expert user of modern technologies applied to the various field of clinical medicine and translational scientific – technological research, but also an active collaborator in the conception and design of new and advanced technologies in cooperation with graduates in the various engineering sectors. All this by aiming at an innovative medicine capable of exploiting tools and systems with high technological complexity (genomics, bioinformatics, big data, artificial intelligence remote technologies).

During the training course, students of M&S will also guaranteed the possibility of acquiring further knowledge and basic skills through the acquisition of 30 optional University Educational Credits, which exceed the 360 credits required for the Medicine and Surgery degree.

In this way, the course will allow the M&S students who decide to also acquire the additional 30 ECTS to request, at the end of the 6 years, the **Bachelor degree in Biomedical Engineering**.

Master Degree in Medicine and Surgery - Registered Students in the Academic Year 2023- 2024 - 1st YEAR (MU03 -22-23)

I YEAR

	Integrated / monodisciplinary course		TOT CFU	SSD	Teaching module		CFU SSD	TAF	disciplinary area
ANNUAL	Cell Morphology and Function	W001875	12	BIO/13	Applied Biology and Genetics	W001876	6	Base	General knowledges for the acquisition of professional competences
				BIO/17	Histology	W001877	4	Caratterizzante	Interdisciplinary clinical education and evidence-based medicine
				BIO/16	Human anatomy	W001878	2	Base	Human morphology
FIRST SEMESTER	Fundamentals of Experimental Physics and Chemistry	W001879	12	FIS/01	Experimental Physics	W001880	6	Affine-integrativa	related activities or integrative
				CHIM/07	Chemical Basis of Technologies	W001881	6	Affine-integrativa	related activities or integrative
FIRST SEMESTER	Mathematical Analysis and Geometry	W001882	12	MAT/05	Mathematical Analysis	W001883	7	Affine-integrativa	related activities or integrative
				MAT/03	Geometry	W001884	5	Affine-integrativa	related activities or integrative
SECOND SEMESTER	Human Anatomy I	W001885	7	BIO/16	Human Anatomy I	W001885	7	Caratterizzante	Interdisciplinary clinical education and evidence-based medicine
SECOND SEMESTER	Biochemistry, Pharmacology and Human Physiology I	W001886	9	BIO/10	Biochemistry	W001887	5	Base	Molecular structure, function and metabolism of molecules of biological interest
				BIO/09	Human Physiology	W001888	2	Caratterizzante	Interdisciplinary clinical education and evidence-based medicine
				BIO/14	Pharmacological Basis of Therapeutics I	W001889	2	Caratterizzante	Pharmacology, toxicology and principles of medical therapy
ANNUAL	Professionalizing Activities - first year	W001989	2		Professionalizing Activities - first year	W001989	2		Further training activities (art. 10.5 d)
SECOND SEMESTER	Elective Teaching Activity - first year (Medicine and Surgery)		2		1 course among those offered by Medicine and Surgery		1		Other elective activities chosen by the student
	Elective Teaching Activity - first year (Biom Engineering)				1 course among those offered by Biomedical Engineering		1		Other elective activities chosen by the student

TOT CFU 56

Number of exams/year 5

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Master Degree in Medicine and Surgery - Registered Students in the Academic Year 2023- 2024 - 2nd YEAR (MU03 -22-23)

II YEAR

	integrated / monodisciplinary course		TOT CFU	SSD	Teaching module		CFU SSD	TAF	disciplinary area
FIRST SEMESTER	Medical Statistics	W001890	4	MED/01	Medical Statistics	W001890	4	Caratterizzanti	Scientific English and linguistic, computer and relational skills, medical pedagogy, advanced and remote information and communication technologies
FIRST SEMESTER	Fundamentals of Biomechanics and Biomechanics	W001891	9	ING-IND/13	Mechanics Applied to Machines	W001892	3	Affini-integrative	related activities or integrative
				ING-IND/34	Industrial Bioengineering	W001893	6	Base	Integrated biological functions of human organs and systems
FIRST SEMESTER	Medical Informatics - Electronic and Computer Bioengineering	W001896	6	ING-INF/06	Medical Informatics - Electronic and Computer Bioengineering	W001896	6	Base	Integrated biological functions of human organs and systems
SECOND SEMESTER	Microbiology Immunology and Technical Sciences	W001897	11	MED/07	Microbiology and Clin Microbiology	W001898	5	Caratterizzante	General and molecular pathology, immunopathology, general pathophysiology, microbiology and parasitology
				MED/04	General Pathology (Immunology)	W001899	2	Caratterizzante	General and molecular pathology, immunopathology, general pathophysiology
				MED/46	Lab Technical Science and Medicine	W001900	2	Caratterizzante	Interdisciplinary clinical education and evidence-based medicine
				BIO/17	Histology (Tissue Engineering)	W001901	2	Caratterizzante	Interdisciplinary clinical education and evidence-based medicine
ANNUAL	Human Anatomy II	W001902	6	BIO/16	Human Anatomy II		6	Caratterizzante	Interdisciplinary clinical education and evidence-based medicine
ANNUAL	Biochemistry and Human Physiology II	W001903	14	BIO/10	Biochemistry	W001904	5	Base	Molecular structure, function and metabolism of molecules of biological interest
				BIO/09	Human Physiology	W001905	9	Caratterizzante	Interdisciplinary clinical education and evidence-based medicine
ANNUAL	Professionalizing Activities -second year	W001990	2		Professionalizing Activities-Medicine and Surgery	W001990	2		Further training activities (art. 10.5.d)
SECOND SEMESTER	Elective Teaching Activity -second year (Medicine and Surgery)		2		1 course among those offered by Medicine and Surgery		1		Other elective activities chosen by the student
	Elective Teaching Activity -second year (Biom Engineering)				1 course among those offered by Biomedical Engineering		1		Other elective activities chosen by the student
TOT CFU			54						
Number of exams/year			6						

OPTIONAL CREDITS SUMMARY (CFU) TO GET AN ADDITIONAL BACHELOR DEGREE IN BIOMEDICAL ENGINEERING

Semester	integrated / monodisciplinary course		SSD	Teaching module	CFU	TAF	disciplinary area
FIRST SEMESTER	Fundamentals of Computer Sciences	W001894	ING-INF/05	Fundamentals of Computer Sciences	6	Base	Integrated biological functions of human organs and systems
FIRST SEMESTER	Electromagnetic Fields for Medicine - basis of electromagnetism	W001895	ING-INF/02	Electromagnetic Fields for Medicine - basis of electromagnetism	6	Affini e Integrative	Affini e Integrative

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Master Degree in Medicine and Surgery - Registered Students in the Academic Year 2023- 2024 - 3rd YEAR (MU03 -22-23)

III YEAR

	integrated / monodisciplinary course		TOT CFU	SSD	Teaching module		CFU SSD	TAF	disciplinary area
FIRST SEMESTER	Applied Physics in Bioengineering	W001906	14	ING-INF/06	Electronic and Computer Bioengineering	W001907	7	Base	Integrated biological functions of human organs and systems
				ING-INF/01	Electronics	W001908	3	Affini-integrative	related activities or integrative
				FIS/07	Applied Physics	W001909	4	Base	General knowledges for the acquisition of professional competences
ANNUAL	Pathology	W001917	12	MED/04	General Pathology	W001918	10	Caratterizzante	General and molecular pathology, immunopatology, general pathophysiology, microbiology and parasitology
				MED/05	Clinical Pathology	W001919	2	Caratterizzante	Laboratory medicine and integrated diagnostics
SECOND SEMESTER	Medical and Surgical Semeiotics and Pathology	W001920	6	MED/09	Internal Medicine (Semeiotics)	W001921	2	Caratterizzante	General medical and surgical clinic
				MED/18	General Surgery and Surgical Semeiotics	W001922	2	Caratterizzante	Pathological disciplines and clinical anatomical correlations
				MED/09	Internal Medicine (Medical Pathophysiology)	W001923	2	Caratterizzante	General medical and surgical clinic
ANNUAL	Professionalizing Activities -third year	W001991	9		Professionalizing Activities -third year	W001991	9		Further training activities (art. 10.5.d)
SECOND SEMESTER	Elective Teaching Activity -third year		1						Other elective activities chosen by the student
TOT CFU			42						
Number of exams/year			3						

OPTIONAL CREDITS SUMMARY (CFU) TO GET AN ADDITIONAL BACHELOR DEGREE IN BIOMEDICAL ENGINEERING

Semester	integrated / monodisciplinary course	SSD	Teaching module	CFU	TAF	disciplinary area
FIRST SEMESTER	Fundamentals of Electrical and Electronic Engineering	ING-IND/31	Electrical Engineering	6	Affini e Integrative	related activities or integrative
		ING-INF/01	Electronics	3	Affini e Integrative	related activities or integrative
FIRST SEMESTER	Fundamentals of Mechanical Engineering	ING-INF/03	Telecommunications	3	Affini e Integrative	related activities or integrative
		ING-INF/04	Automatics	3	Affini e Integrative	related activities or integrative
		ING-IND/13	Mechanics Applied to Machines	3	Affini e Integrative	related activities or integrative

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Master Degree in Medicine and Surgery - Registered Students in the Academic Year 2023- 2024 - 4TH YEAR (MU03 -22-23)

IV YEAR									
	integrated / monodisciplinary course		TOT CFU	SSD	Teaching module		CFU SSD	TAF	disciplinary area
FIRST SEMESTER	Organ System Diseases 1: Blood, Heart and Lung	W001924	13	MED/11	Cardiovascular Diseases	W001925	3	Caratterizzante	Pathophysiology, clinical methodology, clinical preparatory and medical-surgical systematics
				MED/23	Cardiac Surgery	W001926	2	Caratterizzante	Interdisciplinary clinical education and evidence-based medicine
				MED/10	Respiratory System Diseases	W001927	3	Caratterizzante	Pathophysiology, clinical methodology, clinical preparatory and medical-surgical systematics
				MED/15	Blood Diseases	W001928	3	Caratterizzante	Pathophysiology, clinical methodology, clinical preparatory and medical-surgical systematics
				MED/08	Pathological Anatomy	W001929	2	Caratterizzante	Lab medicine and integrated diagnostics
FIRST SEMESTER	Organ System Diseases 2: Kidney and Genitourinary System	W001930	6	MED/14	Nephrology	W001931	2	Caratterizzante	Pathophysiology, clinical methodology, clinical preparatory and medical-surgical systematics
				MED/24	Urology	W001932	2	Caratterizzante	Pathophysiology, clinical methodology, clinical preparatory and medical-surgical systematics
				MED/08	Pathological Anatomy	W001933	2	Caratterizzante	Laboratory medicine and integrated diagnostics
FIRST SEMESTER	Mathematical Models in Medicine	W001934	5	ING-INF/06	Mathematical Models in Medicine	W001934	5	Base	Integrated biological functions of human organs and systems
ANNUAL	Public health	W001935	3	MED/42	Public health	W001935	3	Caratterizzante	Human sciences, health policies and health management
ANNUAL	Pharmacology	W001936	6	BIO/14	Pharmacology	W001936	6	Caratterizzante	Pharmacology, toxicology and principles of medical therapy
SECOND SEMESTER	Data Science for Bioengineering	W001937	6	ING-INF/05	Data Science for Bioengineering	W001937	6	Base	Integrated biological functions of human organs and systems
SECOND SEMESTER	Organ System Diseases 3: Endocrine and Gastrointestinal Systems, Nutrition and Metabolism	W001938	12	MED/12	Gastroenterology	W001939	3	Caratterizzante	Pathophysiology, clinical methodology, clinical preparatory and medical-surgical systematics
				MED/13	Endocrinology	W001940	3	Caratterizzante	Physical activity and well-being medicine
				MED/18	General Surgery and New Techniques in Surgery: Minimally Invasive and Robotic Surgery	W001941	2	Caratterizzante	Pathophysiology, clinical methodology, clinical preparatory and medical-surgical systematics
				MED/09	Internal Medicine	W001942	2	Caratterizzante	Interdisciplinary clinical education and evidence-based medicine
				MED/08	Pathological Anatomy	W001943	2	Caratterizzante	Laboratory medicine and integrated diagnostics
ANNUAL	Professionalizing Activities -fourth year	W001992	14		Professionalizing Activities -fourth year	W001992	14		Further training activities (art. 10.5.d)
SECOND SEMESTER	Elective Teaching Activity -fourth year		2						Other elective activities chosen by the student
TOT CFU			67						
Number of exams/year			7						

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Master Degree in Medicine and Surgery - Registered Students in the Academic Year 2023- 2024 - 5TH YEAR (MU03 -22-23)

V ANNO									
	integrated / monodisciplinary course		TOT CFU	SSD	Teaching module		CFU SSD	TAF	disciplinary area
FIRST SEMESTER	Oncology, Genetics and Internal Medicine	W001944	8	MED/06	Oncology	W001945	3	Caratterizzante	Interdisciplinary clinical education and evidence-based medicine
				MED/03	Genetic Medicine	W001946	3	Caratterizzante	Interdisciplinary clinical education and evidence-based medicine
				MED/09	Internal Medicine (Immune System)	W001947	2	Caratterizzante	General medical-surgical clinic
FIRST SEMESTER	Clinical Neurosciences and Mental Health	W001948	9	MED/26	Neurology	W001949	3	Caratterizzante	Neurological disciplines
				MED/37	Neuroradiology	W001950	2	Caratterizzante	Neurological disciplines
				MED/27	Neurosurgery	W001951	2	Caratterizzante	Neurological disciplines
				MED/25	Psychiatry	W001952	2	Caratterizzante	Psych Clinic and Behavioral Disciplines
FIRST SEMESTER	New Radiology Diagnostic and Therapeutic Modality	W001953	13	MED/36	Radiology and Interventional Radiology	W001954	6	Caratterizzante	Radiological and radiotherapy disciplines
				MED/36	Nuclear Medicine, Radiotherapy, Radiobiology, Radio protection	W001955	3	Caratterizzante	Radiological and radiotherapy disciplines
				ING-INF/06	Electronic and Computer Bioengineering	W001956	4	Base	Integrated biological functions of human organs and systems
SECOND SEMESTER	Head and Neck Diseases	W001957	6	MED/28	Oral Diseases	W001958	2	Caratterizzante	Medical-surgical clinic of the sense organs
				MED/30	Ophthalmology	W001959	2	Caratterizzante	Medical-surgical clinic of the sense organs
				MED/31	ORL	W001960	2	Caratterizzante	Medical-surgical clinic of the sense organs
SECOND SEMESTER	Dermatology, Plastic Surgery and Infectious Diseases	W001961	8	MED/17	Infectious Diseases	W001962	3	Caratterizzante	Community medicine
				MED/35	Cutaneous and Venereal Diseases	W001963	3	Caratterizzante	Clinic of medical-surgical specialties
				MED/19	Plastic Surgery	W001964	2	Caratterizzante	Clinic of medical-surgical specialties
SECOND SEMESTER	Bone and Joint and Technologies in Rehabilitation	W001965	11	MED/33	Musculoskeletal System Diseases	W001966	3	Caratterizzante	Medical-surgical clinic of the musculoskeletal system
				MED/34	Physical and Rehabilitation Medicine	W001967	2	Caratterizzante	Medical-surgical clinic of the musculoskeletal system
				MED/16	Rheumatology	W001968	2	Caratterizzante	Clinic of medical-surgical specialties
				ING-IND/34	Industrial Bioengineering	W001969	4	Base	Integrated biological functions of human organs and systems
ANNUAL	Professionalizing Activities -fifth year	W001993	18		Professionalizing Activities -fifth year	W001993	18		Further training activities (art. 10.5.d)
SECOND SEMESTER	Elective Teaching Activity - fifth year		2						Other elective activities chosen by the student

TOT CFU

75

Number of exams/year	6
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Master Degree in Medicine and Surgery - Registered Students in the Academic Year 2023- 2024 - 6TH YEAR (MU03 -22-23)

VI YEAR

	integrated / monodisciplinary course		TOT CFU	SSD	Teaching module		CFU SSD	TAF	disciplinary area
FIRST SEMESTER	Patient Management	W001970	12	MED/09	Clinical Medicine and Medical and Molecular Therapy	W001971	5	Caratterizzante	General medical-surgical clinic
				MED/18	Clinical Surgery	W001972	3	Caratterizzante	General medical-surgical clinic
				BIO/12	Clin Biochemistry and Clin Molecular Biology	W001973	2	Caratterizzante	Laboratory and diagnostic-integrated medicine
				MED/05	Clinical Pathology	W001974	2	Caratterizzante	Lab and diagnostic-integrated medicine
FIRST SEMESTER	Pediatrics, Ostetrics and Gynecology	W001975	8	MED/38	Pediatric Medicine	W001976	3	Caratterizzante	Pediatric disciplines
				MED/20	Pediatric Surgery	W001977	2	Caratterizzante	Pediatric disciplines
				MED/40	Gynaecology and Obstetrics	W001978	3	Caratterizzante	Obstetric-gynecological disciplines, reproductive medicine and medical sexology
FIRST SEMESTER	Healthcare Robotics and Active Ageing	W001979	9	MED/09	Geriatrics	W001980	3	Caratterizzante	General medical-surgical clinic
				MED/18	Clinical Geriatric Surgery	W001981	2	Caratterizzante	General medical-surgical clinic
				ING-INF/06	Electronic and Computer Bioengineering	W001982	4	Base	integrated biological functions of human organs and systems
FIRST SEMESTER	Emergency and Life Support and Legal Medicine and Bioethics	W001983	13	MED/41	Anesthesiology	W001984	3	Caratterizzante	Medical-surgical emergencies
				MED/09	Medical Emergencies	W001985	2	Caratterizzante	Medical-surgical emergencies
				MED/18	Surgical Emergencies	W001986	2	Caratterizzante	Medical-surgical emergencies
				MED/43	Forensic Medicine	W001987	4	Caratterizzante	Medicine and public health and work environments and medico-legal sciences
				MED/44	Occupational Medicine	W001988	2	Caratterizzante	Medicine and public health and work environments and medico-legal sciences
ANNUAL	Professionalizing Activities -sixth year	W001994	15		Professionalizing Activities -sixth year	W001994	15		Further training activities (art. 10.5.d)
ANNUAL	Foreign Language	W002053	2	L-LIN/12	Foreign Language	W002053	2	other activities	Final test and foreign language (art. 10.5.c)
ANNUAL	Final test	W001995	7	PROFIN_S			7	other activities	Final test and foreign language (art. 10.5.c)

TOT CFU	66
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Number of exams/year	5
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Pre-requisites

In order to take this exam	The following exam must be successfully passed
Human Anatomy I	Cell Morphology and Function
Biochemistry, Pharmacology and Human Physiology I	Human Anatomy I
Microbiology Immunology and Technical Sciences	Biochemistry, Pharmacology and Human Physiology I
Human Anatomy II	Human Anatomy I
Biochemistry and Human Physiology II	Biochemistry, Pharmacology and Human Physiology I and Human Anatomy II
Medical and Surgical Semeiotics and Pathology Organ System Diseases 1: Blood, Heart and Lung Public health Pharmacology Oncology, Genetics and Internal Medicine Clinical Neurosciences and Mental Health New Radiology Diagnostic and Therapeutic Modality Head and Neck Diseases Dermatology, Plastic Surgery and Infectious Diseases Bone and Joint and Technologies in Rehabilitation Patient Management Pediatrics, Obstetrics and Gynecology Healthcare Robotics and Active Ageing Emergency and Life Support and Legal Medicine and Bioethics	Microbiology Immunology and Technical Sciences Pathology
Organ System Diseases 2: Kidney and Genitourinary System	Organ System Diseases 1: Blood, Heart and Lung Medical and Surgical Semeiotics and Pathology
Gastrointestinal Systems, Nutrition and Metabolism	Organ System Diseases 2: Kidney and Genitourinary System
Patient Management	Pharmacology Organ System Diseases 3: Endocrine and Gastrointestinal Systems, Nutrition and Metabolism

Concerning the Professionalizing Activities, there will be an ongoing evaluation expressed by the tutors assigned to each group through a judgment of suitability, which will be documented in the personal booklet.

Once the assessment of suitability for each foreseen skill has been obtained, the student will be able to take the exam in the context of the foreseen sessions.

To be admitted to the Professionalizing Activities (Internship) of the 6th years it is necessary to be enrolled in the sixth year of the single-cycle master's degree course "Medicine and Surgery" and to have passed the exams up to the fourth year and "New Radiology Diagnostic and Therapeutic Modality" exam.