



UNIVERSITÀ
DI CAMERINO

International University Master in Clinical and Sports Biomechanics

3° edition, 1° in English

Milan, Italy

The [International University Master in Clinical and Sports Biomechanics](#) (1st level University Master) has the ambitious goal of creating new professional opportunities in the Biomechanics field. The Biomechanist is a fundamental professional figure for an effective intervention in both clinical-rehabilitation and athletic-sports settings.

This Master addresses the study, analysis and measurement of human movement from a clinical-rehabilitation perspective (reduction of injury risk, knowledge of joint and muscle biomechanics for optimization of rehabilitation, pathological biomechanics, etc.) and an athletic-sports perspective (economy of sport-specific gesture, maximization of physical performance, biomechanical analysis of the individual phases characterizing the various sports for the improvement of the result, etc.) proposing itself as a high-level specialization for clinicians, physical therapists and athletic trainers.

To achieve advanced and specialized training in the field of biomechanics applied to clinical and rehabilitation as well as to sports performance, a training course with the most advanced notions and a faculty of high-level international lecturers is offered.

The training course includes a congruous high-level theoretical know-how and a voluminous and qualified practical activity.

The course will mainly target graduates in Physical Therapy, Exercise Science, Fitness, and Health Products. Other graduate professionals in the medical-rehabilitation and/or sports fields can also participate in the Master program.

The Master aims at the high training of professionals destined for activity at clinical-rehabilitation centers, specialized studios, laboratories of human movement analysis as well as for employees with a specialization in biomechanics of the sporting gesture who can carry out their profession at professional sports clubs (soccer teams, basketball, volleyball, rugby, cycling, athletics, etc.) or at the service and support of individual athletes.

All this to enable the athlete to achieve maximum sports performance, minimization of injuries and optimization of rehabilitation in sports thanks to in-depth knowledge of human clinical-sport and physiological-pathological biomechanics, all technologies and instruments for measuring and analyzing human movement.

MASTER EDUCATIONAL PLAN

Subjects	Instructor	SSD	n°	ECTS	Online hrs	In-person hrs	Alternative didactic hrs*	Individual study hrs	In-person module dates
Research Methodology and Critical Appraisal of the Scientific Literature in Biomechanics with Applications to Sports Medicine, Rehabilitation, and Sports Performance (online)	D. Catelli, PhD (CAN)	M-EDF/01	1	1	7	online		18	online only
Structure of the Master's thesis: a project for a scientific publication (online)	S. Nutarelli, PhDc (SUI)	-	2	0	3	online		0	online only
Anatomohistological bases for clinical biomechanics (online)	K. Tayebati, PhD (ITA)	BIO-16	3	4	28	online		72	online only
Optimization of muscle activations and control/minimization of mechanical stresses acting on specific joint structures in therapeutic exercise (in-person)	M. Petrovic, PhD (ICE)	FIS-07	4	2	0	16 (2 days)	2 (online modules Sports Biomechanics Lecture Series)	59	#1 (4 days) THUR-FRI, NOV 26-27, 2026
Neuromuscular activity and effects of fatigue, facilitation, training, disuse, rehabilitation, and electrical stimulation module #1 Neuromuscular activities and adaptations: effects of fatigue, facilitation, training, disuse, and rehabilitation , E. Lecce, PhD (in-person) module #2 Neuromuscular electrical stimulation: principles and applications , F. Gonnelli, PhD (FAD)	E. Lecce, PhD (ITA) + F. Gonnelli, PhD (ITA)	MED/33 MED/34	5	3	8	16 (2 days)	2 (online modules Sports Biomechanics Lecture Series)	51	#1 (4 days) SAT-SUN, NOV 28-29, 2026
Clinical biomechanics in subjects with musculoskeletal problems, movement disorders, neurological disorders, and advanced age (online)	B. Innocenti, PhD (BEL)	MED/33 MED/34	6	2	14	online		36	online only
Principles of kinematics and kinetics and fundamentals of upper/lower trunk and limb biomechanics and kinesiology (in-person)	P. Worsfold, PhD (UK)	MED/33 MED/34	7	4	4	24 (3 days)	4 (online modules Sports Biomechanics Lecture)	72	#2 (5 days) WED-

							Series)		FRI, JAN 13-15 2027
Evaluation of proprioception and static-dynamic balance (in-person)	P. Picerno, PhD (ITA)	M-EDF/01	8	3	5	16 (2 days)		54	#2 (5 days) SAT-SUN, JAN 16-17 2027
Biomechanics of the upper quadrant applied to sports module #1 Biomechanics of the upper quadrant applied to sports , M. Mondonico, MS (in-person + online) module #2 Epidemic of UCL Injuries in Adult and Youth Baseball Pitchers (p1) + Biomechanics and Pathology of the Overhead Throwing Elbow (p2) + Biomechanics and Pathology of the Overhead Throwing Shoulder (p3) , R. Escamilla, PhD (online)	M. Mondonico, MS (ITA) + R. Escamilla, PhD (USA)	M-EDF/02	9	3	5	16 (2 days)	4 (online modules Sports Biomechanics Lecture Series)	54	#3 (4 days) THUR-FRI, MAR 4-5, 2027
Principles of strength, isokinetic objectification, and electromyographic evaluation of muscle activity for exercise prescription and rehabilitation (in-person)	M. Romanazzi, PhDc (ITA)	MED/34	10	3	5	16 (2 days)	1 testing session during the internship (8 hrs)	54	#3 (4 days) SAT-SUN, MAR 6-7, 2027
Biomechanics of the lower quadrant applied to sports module #1 Biomechanics of the lower quadrant applied to sports , S. Nutarelli, MS PhDC (in-person + online) module #2 While Performing Weight Bearing and Non-Weight Bearing Exercises Commonly Used in Sport & Rehabilitation: ACL Loading (p1) +	S. Nutarelli, PhDc (SUI) + R. Escamilla, PhD (USA)	M-EDF/02	11	3	5	16 (2 days)	4 (online modules Sports Biomechanics Lecture Series)	54	#4 (5 days) WED-FRI, APR 14-16, 2027

PFJ Loading (p2) + Muscle Recruitment Patterns (p3), R. Escamilla, PhD (online)									
Kinetics and kinematics assessment methodologies in sport, exercise, and rehabilitation module #1 Inertial wearable sensor systems, force platforms, and dynamometric testing , S. Nutarelli, MS PhD (in-person) module #2 2-3D video analysis and optoelectronic analysis , Y. Tona, PhD (online)	S. Nutarelli, PhDc (SUI) + T. Yona, PhD (ISR)	NG-INF/06	12	4	4	24 (3 days)	1 testing session during the internship (8 hrs) + 4 (online modules Sports Biomechanics Lecture Series)	72	#4 (5 days) SAT-SUN, APR 17-18 2027
Biomechanics applied to work ergonomics: design, optimization, and reconceptualization of workstations (online)	R. Di Benedetto (ITA)	ING-IND/34	13	1	7	online		18	online only
Technologies, methodologies, and main applications of an optoelectronic motion analysis laboratory, with reference to clinical, ergonomic, and sports fields (in-person) *module held at the Optoelectronic Human Motion Analysis Laboratory 'Human Performance Lab', Politecnico di Milano c/o Lecco Campus)	M. Galli, PhD + L Donno, PhD + G. Palotti, PhD Student + C. Francia, PhD Student + P. Maver	M-EDF/02	14	3	5	16 (2 days)		54	#5 (2 days) at the Lecco Campus FRI-SAT, JUN 25-26, 2027
Running biomechanics and technique analysis module #1 Running biomechanics , B. Van Hooren, PhD (online) module #2 Running biomechanics and technique analysis , B. Van Hooren, PhD (in-person)	B. Van Hooren, PhD (NED)	ING-INF/06	15	3	5	16 (2 days)	3 (online modules Sports Biomechanics Lecture Series)	54	#6 (5 days) THUR-FRI, SEPT 16-17, 2027
Biomechanics for performance optimization: ideal movement patterns, injury risk reduction, performance economy, and sport-specific technique variations: sports with a prevalence of sprinting and changes of direction, jumping sports, other sports (in-person)	L. Russo, PhD (ITA)	M-EDF/02	16	3	5	16 (2 days)	1 (online modules Sports Biomechanics Lecture Series)	54	#6 (5 days) SAT-SUN, SEPT 18-19, 2027

Biomechanics for performance optimization: ideal movement patterns, injury risk reduction, performance economy, sport-specific technique variations: module #1 Bike-fitting for road cycling , (online 3 hrs + in-person) module #2 Bike-fitting for time trial, hour record and in triathlon, mountain bike (Riceputi – da doppiare in inglese)-	J. Barrionuevo (SPA) + L. Riceputi, MS (ITA)	M-EDF/02	17	2	6 h	8 (1 day)	3 (online modules Sports Biomechanics Lecture Series)	11	#6 (5 days) MON, SEPT 20, 2027
The role of the biomechanist in sport: integration in a multidisciplinary team (online)	P. Comfort, PhD (UK)	M-EDF/02	18	1	7	online		18	online only
Totale crediti insegnamenti				45	123	200		779	
Internship				5				125	
Final Exam				10				250	
Tot.				60				1500	

* Alternative didactic hours include: practical exercises/laboratories, seminars/expert presentations, company visits, attending conferences, project works, etc.

Summary of the in-person module dates:

- Module #1: November 26-29, 2026
- Module #2: January 13-17, 2027
- Module #3: March 4-7, 2027
- Module #4: April 21-25, 2027
- Module #5: June 25-26, 2027
- Module #6: September 16-20, 2027