



Master 2 Musculo-Skeletal system, Locomotion, Exercise (MuSkLE)

Master MuSkLE

International Excellence Program

Head : Pr Vincent Pialoux

Field of teaching unique in France :

From the molecular to the integrative level of the Musculo-Skeletal system

- **All courses in English** - 20 students maximum per promotion (>50% foreigners)
- **Disciplines:** Cell biology, Physiology, Biomechanics, Kinesiology, Health, Sport sciences
- **10-months internship** in one of the 18 research teams of the MuSkLE consortium
- **Incentive Scholarships** in addition to the usual internship gratification (for foreign students) :

Call for MuSkLE Excellence Scholarships

Program 2024-2025 of the Master 2 MuSkLE

Unit Type	Full name of the Units	ECTS	Lecture (h)	Tutorial (h)	Lab work (h)
6 ECTS among	Musculo-Skeletal system - Locomotion				
UE	Mecanobiology	6			
UE	Fundamental and clinical myology	6	36		
UE	Biomechanics of the locomotor system	6	33	9	18
6 ECTS among	Musculo-Skeletal system - Fundamental				
UE	Development and stem cells in Plants and Animals	6	36		
UE	Muscular cell physiology	6			
UE	Physiology of metabolic homeostasis	6	36		
UE	Experimental and modeling principles in biomechanics	6	14	20	26
UE	Cardiovascular physiopathologies	6	24	12	
6 ECTS among	Musculo-Skeletal system - Exercise and human performance				
UE	Molecular genetics of neuromuscular disorders	3	12	6	
UE	Shaping the cell: from architecture to function	3	14	2	
UE	Exercise physiology	6			
UE	Performance optimization: biomechanical and neuronal factors	6	26		
UE	Sciences 2 : Physical activity and chronic pathologies	6		33	
6 ECTS among	From cell biology to skeletal muscle function				
UE	Innovative in vitro models	3	12		12
UE	Advanced bio-imaging	3	12	7,5	9
UE	Aging and cell death	3	13	5	
UE	Comparative physiology in extreme environment	6	36		
UE	Pharmacology, toxicology and study models	6	34,5	25,5	
UE	Motor disability and optimization of motor function	6			
UE	Advanced exercise physiology and biomechanics	6		45	
6 ECTS among	From cell morphogenesis to human performance				
UE	Molecular mechanisms of cell signalling	3	10	8	
UE	Tissue morphogenesis and repair	3	7,5	10,5	
UE	Metabolic and nutritional physiopathologies	6	24	12	
UE	Physiology of energy homeostasis	6	24	12	
UE	Functional investigation : from gene to patient	6	36		
UE	Design animal research: certif lab. animal sces Level 1/B	6	44	6	6
UE	Sciences 1 : Muscular biomechanic - MuSkLE	6	13,5	3	10,5
6 ECTS among	Internship				
UE	Internship in laboratory	30			

Cellular level

Tissular level

Integrative level

Master Musculo-Skeletal system, Locomotion, Exercise

Master 2 MuSkLE pathway graduates for 3 Mentions of Master depending academic history and study field :

- Integrative Biology and Physiology (BIP)
- Training and Optimization of Sports Performance (EOPS)
- Mechanics (Mécanique)

Email: BALP.Master_MuSkLE@univ-lyon1.fr

[More information](#)

Major requirements (non-exhaustive list)

- 1 year of Master obtained before July 2024 in the field of Cell biology, Physiology, Biomechanics, Kinesiology, Health, Sport sciences
- Excellence of the academic background
- Internship and technical skills
- Letter of motivation
- Advanced contact with one of the team of the [MuSkLE](#) consortium

How to apply

<https://ecandidat.univ-lyon1.fr/lyon1.fr/>

First application period: April 1st 2024 - May 15th 2024
Second application period: June 5th 2024 - July 6th 2024