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Université Claude Bernard Lyon 1 Establishment Contract - 2016-2020

Master's degree 2nd YEAR
TRAINING AND OPTIMISATION OF SPORTING PERFORMANCE (EOPS)
MPSI Research PROGRAMME
MOVEMENT, PERFORMANCE, HEALTH AND INNOVATION (MPSI)

2020-2021

ADMINISTRATIVE AND ACADEMIC CONTACTS

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Laboratoire Interuniversitaire de Biologie de la Motricité

Laboratoire sur les Vulnérabilités et l'Innovation dans le Sport

Subject to Change
Non-binding document
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Content of the course

M2 MPSI programme – Social and Human Sciences programme – 3rd semester: ***Acquire the knowledge and methods specific to scientific research***

Acquire a specific research profile by choosing teaching units (unités d'enseignement - UE) corresponding to your personal profile

APOGEE Code	Teaching unit (unité d'enseignement - UE)	ECTS (European credits)	Targeted skills:	Status	Hours in class
2 teaching units + 1 option from between the 2 teaching units of the professional PPMR MASTER (12 ECTS)					
LGSPT2AM	**English**	**3**	**Acquire a basic command of written and oral scientific English.**	**Compulsory**	**24 hrs (tut.)**
SPT2113M	**Methodology of research in the Life Sciences**	**6**	**Know and understand the main methods and associated tools for measuring human motor activity.** **Implement a measuring method and acquire the associated data during the research protocol.** **Consider the usefulness of measurements from a scientific point of view and identify the ethical questions they pose when applied to humans.**		**20 hrs (tut.)**
SPT2134M	**Biological approach to fatigue and overtraining**	**3**	**Know and understand the processes and physiological indicators of peripheral fatigue.**	**Options**	**30 hrs (tut./prac.)**
SPT2135M	**Psychological approach to fatigue and overtraining**	**3**	**Know and understand the processes and psychological indicators of central fatigue.**		**30 hrs (tut./prac.)**
2 teaching unit (unité d'enseignement - UE) options in Master's degrees in Sports Science (up to 12 ECTS))					
SPT2116M	**Motricity, performance and health: biomechanical and physiological approach.**	**6**	**Know, understand and analyse the biomechanical and physiological factors in performance motricity in order to prevent undue injuries.**	**Options**	**20 hrs (lect.)**
SPT2117M	**Motricity, performance and health: psychological approach.**	**6**	**Know, understand and analyse the psychological factors underlying commitment and the emotional experience in performance motricity.**		**20 hrs (lect.)**
SPT2118M	**Motor imaging, performance and health: neuroscientific approach.**	**6**	**Know, understand and analyse the neurophysiological and behavioural factors in the representation of action and its effects on motor performance and therapy.**		**20 hrs (lect.)**
SPT2122M	**Motricity, health and quality of life.**	**6**	**Know, understand and analyse the factors associated with physical activity.**		**20 hrs (lect.)**

1 teaching unit of choice from the other Master's degrees at Université de Lyon (6 ECTS)					
MGC2338M	**Biomechanics of the locomotor system**	**6**	**Know, understand and analyse the biomechanical parameters in theory, with insights into the various applications of movement analysis.**	**Options**	**32 hrs (lect.) and 18 hrs (prac.)**
BIO2373M	**Skeletomuscular function and associated illnesses**	**6**	**Know and master the physiological and pathological concepts of the skeletomuscular function (neuromuscular junction, excitation-contraction coupling, metabolism and muscular differentiation).**		**30 hrs (lect.)**
BIO2377M	**Cardiovascular physiopathology**	**6**	**Know and master the concepts of cardiovascular physiopathology (cardiac ischemia-reperfusion, hemorheology, atherosclerosis, arterial pressure, vascular malfunctions and heart rate disorders).**		**24 hrs (lect.) and 12 hrs (tut.)**
BIO2357M	**Neuro-conferences**	**6**	**Understand the main neurophysiological functions described in the conferences presented**		**30 hrs (tut.)**
BIO2359M	**Neural Basis of Cognition**	**6**	**Be familiar with the neurophysiological correlates of the mental processes involved in human cognition.**		**30 hrs (tut.)**
SPT2127M	**Opening course**	**6**	**To be chosen from among courses other than those proposed above.**		

NB: other teaching units are possible but from within the human and social sciences They are less appropriate for the EOPS-PPMR programme and are not included in this table.

M2 MPSI programme – Social and Human Sciences programme – 4th semester: ***Acquire the tools necessary to design and implement a research protocol.***
Master the stages of research in the Life Sciences
Master the written and oral scientific statistical and communication tools.

APOGEE Code	Teaching unit (unité d'enseignement - UE)	ECTS (European credits)	Targeted skills:	Status	Hours in class
SPT2128M	**Scientific communication**	**3**	**Know, understand and apply the principles and rules of written and oral scientific communication in the Life Sciences.**	**Compulsory**	**20 hrs (tut.)**
SPT2129M	**Statistics**	**3**	**Know and understand the univariate, bivariate and multivariate statistical methods, inferential procedures and effect sizes.**		**20 hrs (tut.)**
SPT2130M	**Professional experience in a laboratory.**	**24**	**Know and understand the stages of construction of a research protocol.** **Apply this knowledge to design, implement and carry out the research and present the results before a panel of examiners.** **Summarise all aspects of the course recognised as being useful for preparation of the research dissertation.**		**300 hrs**

1. Course objectives and description

The professional EOPS programme (training and optimisation of performance) offers training through research: From the first year, MPSI students (Movement, Performance, Health and Innovation) combine their professional specialisation with forays into research, thanks to the work placement in a laboratory. Students on the course benefit from research-based learning, through their dissertation prepared within the laboratory. The LIBM, research group 7424 (*Interuniversity Laboratory of Biology and Motricity*) and the L-VIS, research group 7428 (*Laboratory on Vulnerability and Innovation in Sport*) are the 2 host laboratories.

Training in research is central, but the professional teaching units enable students to maintain a link to the professional opportunities in the field of motor and mental performance and return to sport (PPMR). The specific teaching units are courses based on the research themes of the LIBM and L-VIS, and on other courses at Université de Lyon, in order to offer more in-depth study in a particular scientific field.

A personal teaching contract enables each student to build their own course programme, in line with their research project and professional goals.

2. Admission requirements

Admission is automatic for all students that pass the first-year Master's course. The application must include a research project approved by a faculty member within the first 2 weeks of the academic year. Admission is possible in initial education as well as for any professional working in the field of human motricity (clinic, ergonomics, etc.)

The MPSI course is normally taken by students in initial education. However, professionals in the field of human motricity are admitted to the course to resume their studies as part of a professional project.

3. Organisation of the course

The course consists of 4 semesters spread over 2 years. In Master 2, semester 3 is dedicated to specialised courses, according to students' individual choices. Research commences from the start of the year, though the dissertation is only completed in semester 4. The teaching units entitled 'Scientific Communication' and 'Statistics' are taught in semester 4 in order to accompany the structuring of the dissertation. The entire year is organised on the basis of the link between teaching and research, and reinforced by personalised supervision of the dissertation.

4. Career opportunities and/or further study

The Master's degree in MPSI is designed to lead to further studies at PhD level, but the combination with the professional course enables students to specialise from the outset in the field of motor performance and health. It therefore enables students to consider several avenues of professional insertion. The MPSI course corresponds to the level of 'engineer' in the business world, with responsibilities as research manager or project manager. The research-based professions offer possible opportunities in jobs in the research and development departments of large companies (manufacturers and distributors of sports equipment and materials). The MPSI offers access to a career in public research (research engineer). The PhD offers access to positions as a researcher (CNRS, INSERM, INRIA), academic (universities and graduate schools) and research engineer.

5. Targeted skills

The MPSI course develops skills focused on the production of scientific knowledge:

- Acquire specific training on a particular research topic (specialisation).
- Master the use of bibliographical research methods (consultation of data banks).
- Master the main methods of investigation in a specific scientific field.
- Master the use of scientific communication tools: written dissertation, oral presentation.
- Master the main rules for producing a scientific paper.

Particular attention is paid to the basics of scientific communication, as necessary tools for professional insertion.

6. Possible areas of research

The research topic is linked to the priority themes of the LIBM:

- **TH1: Vascular biology and red blood cells** Understand the physiopathological processes involved in complications of sickle cell disease and atherosclerosis, and show the potentially beneficial effects of physical exercise in these 2 diseases.
- **TH2: Muscular deconditioning and reconditioning.** Identify the processes at the origin of muscular alterations, develop prevention methods and study the effect of exercise on the recovery of muscular potentialities.
- **TH3: Mental and sensory-motor processes** Understand the role of motor imaging, sensory-motor plasticity and interactions between cognitive and sensory-motor postural regulation processes in performance, the rehabilitation of motor functions and the prevention of injuries.
- **TH4: Human/equipment and human/environment interactions.** Identify organic adaptations under severe constraints, whether physiological (environment), mechanical (equipment) or nervous (acquisition of information, motor control).
- **TH5: Locomotor system, performance, illness and prevention.** Understand the determining biomechanical and neuromuscular factors in motor performance, study the deficiencies and illnesses of the locomotor system, injury prevention and the assumed benefits of physical activity for health.

Detailed information is available on the website http://www.libm.fr. Subjects concerning the human sciences come under the L-VIS.

7. Student numbers and pass rate

		2016-17	2017-18	2018-19	2019-20
M2 MPSI	**Student numbers**	21	19	12	23
	Pass	13	13	5	In progress
	Pass rate	**62%**	**68%**	**42%**	