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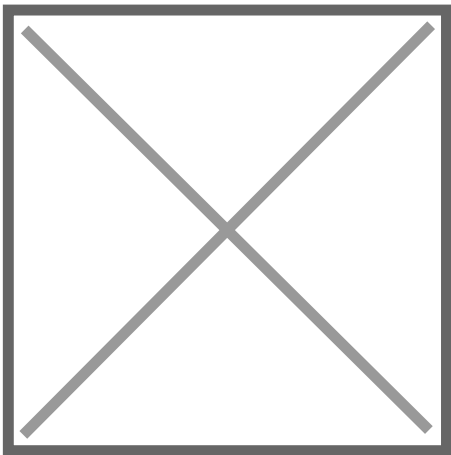
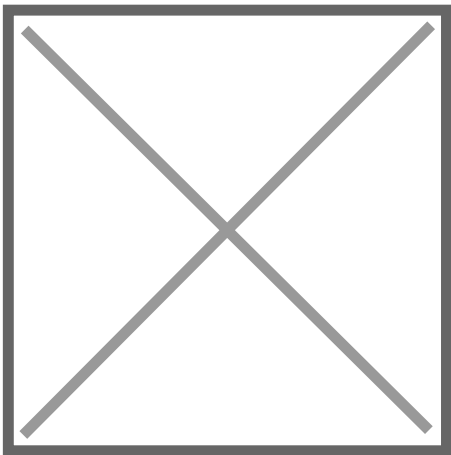
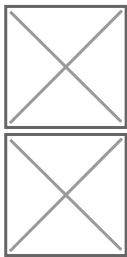
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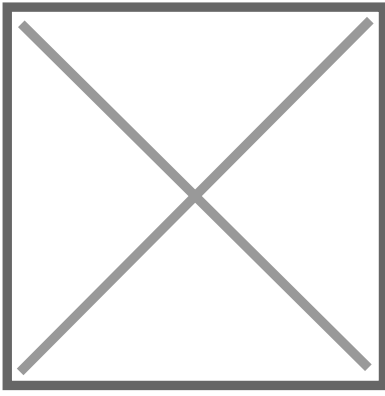
Envoyer

Une erreur est survenue. Merci de réessayer ultérieurement
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Add to Compare

M1 Engineering, Data Science, Human Movement.





Master's degree

Specialisation Human Movement & Sport Sciences : Engineering and Ergonomics

Language(s) of instruction

English French

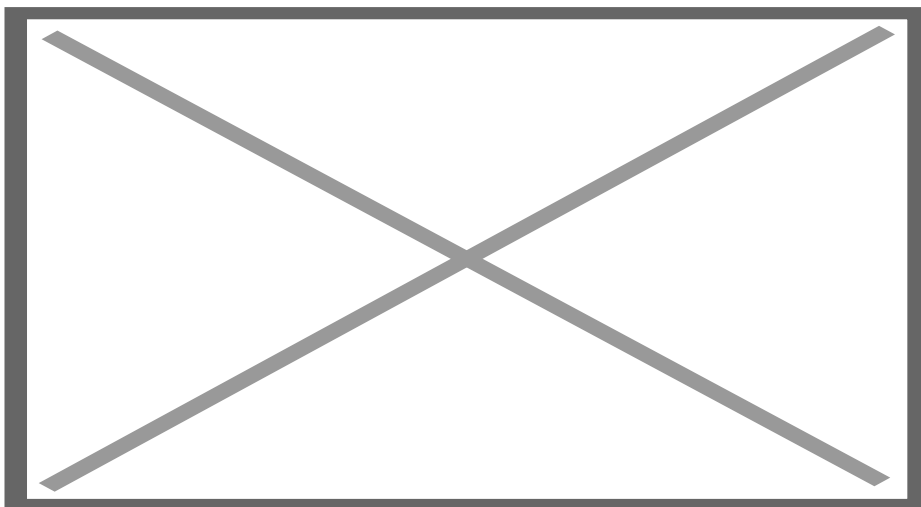
This master's program trains experts in human movement analysis, combining physical ergonomics, biomechanics, data science, robotics, and cognitive sciences. Students deepen their knowledge in musculoskeletal modeling, AI applied to movement, and human-machine interaction, blending scientific methodology with technological projects. The program includes numerous practical sessions (measurement, programming, etc.), internships, specialized conferences, and courses in project management.

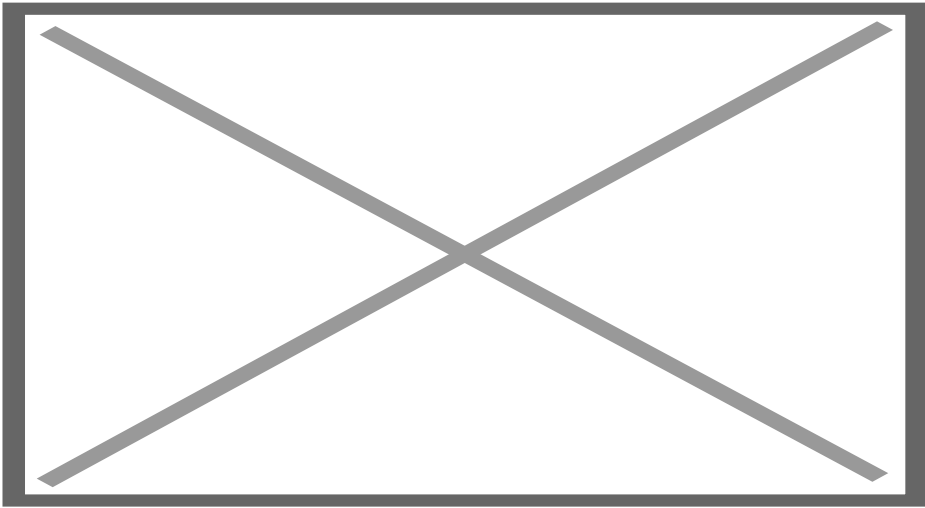
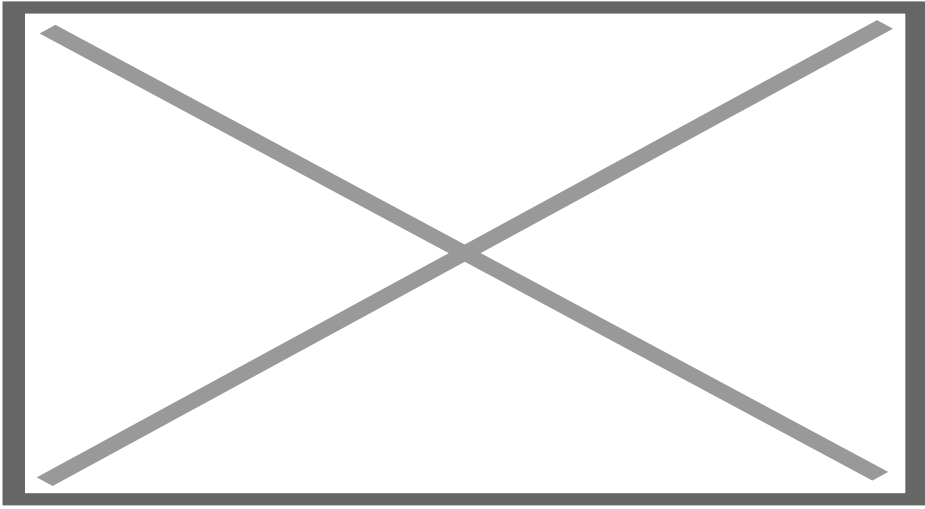
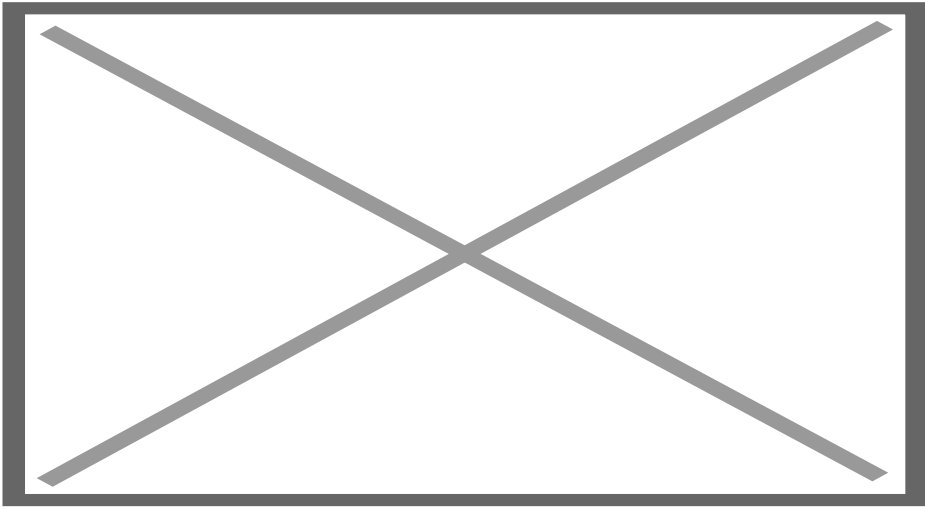
The master's program covers data science (statistics, machine learning, data visualization), movement analysis (3D biomechanics, sensors, musculoskeletal modeling), physical engineering (mathematics, mechanics, robotics), scientific methodology, and cognitive sciences (AI, psychophysics), with programming as a transversal skill.

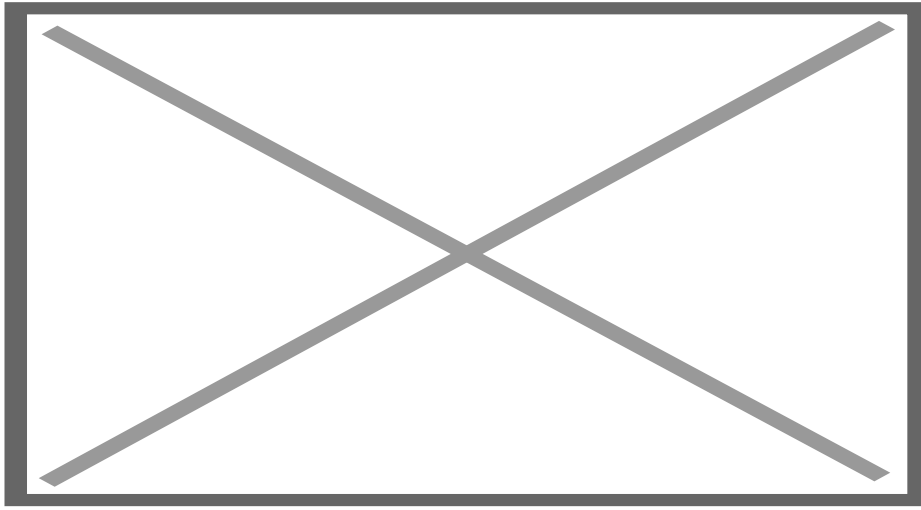
In the first year, students gain solid foundations through practical projects. In the second year, the program specializes in physical ergonomics, assistive robotics, human-machine interaction, AI for movement, and systems approach. The second semester is dedicated to an extended internship in a lab or company (health, sports, R&D, etc.). The program also includes modules in project management, innovation, and entrepreneurship, complemented by immersive experiences: practical work (measurements, programming), hackathons, interdisciplinary conferences, and collaborative projects.

[Télécharger la fiche détaillée](#)

[Apply Now](#)







Information

- [Overview](#)
- [Application requirements](#)
- [Schedule](#)

Présentation

Skills

Acquire and apply complex and highly specialized multidisciplinary knowledge.

Engineering and data science applied to human movement.

Objectives

The Master's program in STAPS – *Engineering and Ergonomics of Physical Activity* (IEAP) at Université Paris-Saclay trains professionals at the intersection of human movement science, engineering, and data science. It is built around a single track, *Engineering, Data Science, Human Movement* (*Ingénierie, Data Science, Mouvement Humain*, IDSMH), open to students from STAPS (sport sciences), fundamental sciences, and engineering backgrounds, as well as engineering students in a dual-degree program.

The curriculum develops a dual expertise in engineering and data science applied to human movement, addressing the growing needs in assistive robotics, human-machine interaction, and movement analysis across professional, sports, and healthcare contexts. The goal is to design human-centered technological systems capable of measuring, modeling, and analyzing both healthy and pathological movement.

The curriculum covers a broad spectrum, including data science (statistics, machine learning, data visualization), human movement analysis (3D biomechanics, sensors, musculoskeletal modeling), physical engineering (mathematics, mechanics, robotics), scientific methodology, and cognitive sciences (AI,

psychophysics). Programming, a transversal skill, is applied across all these fields.

In the first year (M1), students acquire strong foundational knowledge, applied through hands-on projects (technical reports, technological projects, internship). In the second year (M2), the program offers specialization in physical ergonomics, assistive robotics, human-machine interaction, AI for movement, and system-based approaches. The second semester is fully dedicated to a long-term internship, either in a research lab or in industry (health, sports, R&D, etc.).

The training also includes modules on project management, innovation, and entrepreneurship, reinforced through immersive experiences such as practical labs (measurement, programming), hackathons, interdisciplinary conferences, and collaborative projects.

Career opportunities include human movement analysis, physical ergonomics (occupational health, workplace design), sports performance, R&D in human-machine interaction, robotics, and data science applied to human behavior. Graduates go on to work as R&D engineers, data scientists, research officers, ergonomists, technical sales engineers, or pursue PhDs (CIFRE fellowships or ministerial contracts).

The program relies on a strong academic network within Université Paris-Saclay: the Faculty of Sport Sciences, the Faculty of Science (Departments of Physics and Biology), CentraleSupélec, UVSQ (Faculty of Sciences), and Polytech Paris-Saclay.

Débouchés

Career prospects

After a Master's or Master's + PhD: engineer (R&D, control, production, etc.)

After a Master's + PhD: researcher or lecturer

Data Scientist

After a Master's degree: Data scientist

After a Master's degree: Research analyst

R&D Project Manager

Consulting

Research and Innovation Manager

Research professions

Lecturer (after a PhD)

Human-computer interaction ergonomist - HCI

Human factors ergonomist

Head of mission / projects

Human Factors Engineer
Project follow-up and evaluation manager
Data scientist

Further Study Opportunities

R&D researcher or data modelling and analysis expert in leading-edge companies or laboratories.

Data Scientist, Data Analyst, Ingénieur·e en Machine Learning dans des secteurs innovants (tech, finance, santé, énergie, etc.) ;

PhD

Engineering, research and development

Students in this track can turn to research at the end of the 2nd year Master's.

Students with a 2nd year Master's degree have the possibility to pursue doctoral research.

PhD thesis

Calendar

Start of programme (indicative date)

01/09/2026

Admission

Admission Route

Life Sciences

Physical and sports sciences

Science and Technology

Capacity

Available Places

25

Target Audience and Entry Requirements

This Master's program is open to students from STAPS Bachelor's degrees, the dual-degree STAPS-SPI Bachelor's from Université Paris-Saclay, as well as from Bachelor's programs in Science and Engineering. It is also offered as a dual-degree option for engineering students.

As part of the selection process for entry into the first year of the Master's program (in accordance with the law of 23/12/2016) and subject to capacity limits, applicants must have completed a Bachelor's degree in one of the following fields: STAPS APA&S, STAPS Sport Training, STAPS Engineering and Ergonomics of Physical Activity, Life Sciences, Science and Technology, Mathematics, Biology & Health, or Physical Engineering. The program also welcomes students or professionals from paramedical fields (Physiotherapy, Occupational Therapy, Ergonomics, Osteopathy, Podiatry, Medicine, Nursing, etc.). Other backgrounds may be considered upon review of the application, especially for international degrees. For students in initial training, particular attention will be paid to final grades in scientific subjects. Academic results should be consistent with at least "Honours" (equivalent to *Assez bien* to *Très bien*) in the third year of the Bachelor's degree.

Période(s) de candidature

Inception Platform

From 15/01/2026 to 16/03/2026

From 19/06/2026 to 25/06/2026

Supporting documents

Compulsory supporting documents

2nd letter of recommendation (compulsory for candidates who have already been enrolled in higher education in France before).

Motivation letter.

All transcripts of the years / semesters validated since the high school diploma at the date of application.

Certificate of French (compulsory for non-French speakers).

Curriculum Vitae.

Detailed description and hourly volume of courses taken since the beginning of the university program.

Additional supporting documents

VAP file (obligatory for all persons requesting a valuation of the assets to enter the diploma).

Supporting documents :

- Residence permit stating the country of residence of the first country
- Or receipt of request stating the country of first asylum
- Or document from the UNHCR granting refugee status
- Or receipt of refugee status request delivered in France
- Or residence permit stating the refugee status delivered in France
- Or document stating subsidiary protection in France or abroad
- Or document stating temporary protection in France or abroad.

Programme

M1 IDSMH - S1

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
From cognitive science to AI for human movement I	5	Semestre 1	28	16				

From cognitive science to AI for human movement I

ECTS : 5

Semester: Semestre 1

Detail

Lecture: 28

Directed study: 16

Language(s) of instruction

Anglais

Remote teaching

non

Learning objectives

À l'issue du cours, l'étudiant·e saura :

Type of assessment

Détail renseigné au niveau Élément Constitutif

Ergonomie Physique	3	Semestre 1	14	2	6
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Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
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■

Ergonomie Physique

ECTS : 3

Semester: Semestre 1

Detail

Lecture: 14

Practical study : 6

Directed study: 2

Language(s) of instruction

Français

Remote teaching

non

Type of assessment

Détail renseigné au niveau Élément Constitutif

[Mathématiques](#)

[pour le](#)

[mouvement](#)

[humain](#)

6	Semestre 1	20	30
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Mathématiques pour le mouvement humain

ECTS : 6
 Semester: Semestre 1
 Detail
 Lecture: 20
 Directed study: 30
 Language(s) of instruction
 Français
 Remote teaching
 non
 Prerequisites

Bases en physique (mécanique newtonienne) et en mathématiques (trigonométrie, vecteurs, dérivation, intégration).

Programme/contents

Outils fondamentaux de calcul matriciel et calcul différentiel pour l'étude du mouvement humain et sa modélisation (algèbre linéaire et analyse fonctionnelle). Ces notions théoriques seront généralement accompagnées d'exemples d'utilisation concrets issus du domaine des sciences du mouvement humain.

Type of assessment
 Evaluation Continue non Intégrale

[Human biomechanics and motor control](#)

4	Semestre 1	24	15
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Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
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Human biomechanics and motor control

ECTS : 4

Semester: Semestre 1

Detail

Lecture: 24

Directed study: 15

Language(s) of instruction

Anglais

Remote teaching

non

Type of assessment

Détail renseigné au niveau Élément Constitutif

Data Science I	5	Semestre 1	12	24	10
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Data Science I

ECTS : 5

Semester: Semestre 1

Detail

Lecture: 12

Practical study : 10

Directed study: 24

Language(s) of instruction

Anglais

Remote teaching

non

Type of assessment

Détail renseigné au niveau Élément Constitutif

Understanding scientific research I	3	Semestre 1	12	12
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Understanding scientific research I

ECTS : 3

Semester: Semestre 1

Detail

Lecture: 12

Directed study: 12

Language(s) of instruction

Anglais

Remote teaching

non

Programme/contents

This course contains three different sub-courses :

- Research methods : A critical examination of current scientific paradigms, and research methodologies related to conducting research in the field of human movement sciences.
- Normes, sécurité, législation : Éthique de la recherche chez l'humain (une législation en constante évolution: Loi Huriet, Loi Jardé, Europe, à l'international, RGPD et archivage des données, etc.); les comités et pôles éthiques (mise en place, fonctionnement, avis, etc.). La déontologie et l'intégrité scientifique (la charte nationale de déontologie des métiers de la recherche, le problème de la méconduite scientifiques, etc.); la question de l'intégrité dans les publication scientifiques (les revues prédatrices, etc.); la Science ouverte et citoyenne; présentation de "Poléthis" (le Conseil pour l'éthique de la recherche et l'intégrité scientifique de l'UPSaclay) ; les dispositifs médicaux, normes, marquage CE, etc.

Bibliography

Cobey, K.D. et al (2018). What is a predatory journal? A scoping review. Version 2. F1000Res. 2018; 7: 1001. Published online 2018 Aug 23. doi: 10.12688/f1000research.15256.2

Journal Polethis n°1 (2019)

<http://www.espace-ethique.org/ressources/revues-et-publications/journal-polethis-ndeg1>

Pratiquer une recherche intègre et responsable,
Guide CNRS/COMETS 2017

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
Connaissance du Milieu Professionnel I	4	Semestre 1	28	8				
■								

Connaissance du Milieu Professionnel I

ECTS : 4

Semester: Semestre 1

Detail

Lecture: 28

Directed study: 8

Language(s) of instruction

Anglais

Remote teaching

non

Programme/contents

Dans cette UE, les étudiants sont amenés à suivre des éléments de la séquence thématique ST2 Robotique médicale (1A) à l'école CentraleSupélec. Cette séquence a lieu entre fin novembre et fin janvier. Au sein de cette ST2, les conférences introductives permettent de découvrir le contexte économique, social, médical, scientifique et technologique des systèmes robotiques médicaux.

De plus, les étudiants assisteront au Workshop International de la Graduate School "Sport, Mouvement Facteurs Humains" qui se tient sur 2 jours au mois de Janvier. Ce Workshop fait intervenir des enseignant-chercheurs d'universités internationales renommées sur une thématique différente tous les ans.

Des outils pour l'insertion professionnelle seront également présentés par la Direction de l'Orientation Professionnelle et les Relations Entreprise de l'Université Paris-Sud. Il s'agira notamment de s'entraîner à écrire un CV et une lettre de motivation.

Des ateliers de formation, sensibilisation et des conférences autour du développement soutenable, en lien avec les thématiques STAPS, complètent cette unité d'enseignement.

Type of assessment

Détail renseigné au niveau Élément Constitutif

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
Human movement analysis	3	Semestre 2		17				
■								

Human movement analysis

ECTS : 3

Semester: Semestre 2

Detail

Directed study: 17

Project : 30

Language(s) of instruction

Français

Remote teaching

non

Type of assessment

Détail renseigné au niveau Élément Constitutif

Data Science II	3	Semestre 2	12	18
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Data Science II

ECTS : 3

Semester: Semestre 2

Detail

Lecture: 12

Directed study: 18

Language(s) of instruction

Anglais

Remote teaching

non

Type of assessment

Détail renseigné au niveau Élément Constitutif

Ingénierie Physique	7	Semestre 2	26	30	6
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Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
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■

Ingénierie Physique

ECTS : 7

Semester: Semestre 2

Detail

Lecture: 26

Practical study : 6

Directed study: 30

Language(s) of instruction

Français

Remote teaching

non

Type of assessment

Détail renseigné au niveau Élément Constitutif

Entrepreneuriat, comptabilité, jeu d'entreprise	3	Semestre 2	42
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Entrepreneuriat, comptabilité, jeu d'entreprise

ECTS : 3

Semester: Semestre 2

Detail

Directed study: 42

Language(s) of instruction

Français

Remote teaching

non

Programme/contents

L'UE comprend deux enseignements distincts :
Economie d'Entreprise, Simulation de gestion (jeu d'entreprise)

Economie d'Entreprise:

Classifications des entreprises, Les fonctions de l'entreprise : La fonction de production, La fonction commerciale, La fonction financière, La fonction Ressources Humaines, Croissance des entreprises (modalités et stratégies)

Simulation de gestion (jeu d'entreprise):

Appréhender les enjeux économiques et financiers de l'entreprise très concrètement grâce à un simulateur de conditions de marché et de concurrence entre entreprises .Mise en situation pendant 3 jours de la gestion au quotidien d'une entreprise, en axant sur les calculs de rentabilité et les stratégies marketing à mettre en place.
Utilisation d'un logiciel de simulation.

Learning objectives

Comprendre le fonctionnement de l'entreprise : présentation des différentes composantes de l'entreprise et des objectifs, souvent contradictoires entre ces fonctions.

Type of assessment

Evaluation Continue non Intégrale

[Understanding
scientific
research II](#)

2.5

Semestre
2

24

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
■								

Understanding scientific research II

ECTS : 2.5

Semester: Semestre 2

Detail

Directed study: 24

Language(s) of instruction

Anglais

Remote teaching

non

Type of assessment

Détail renseigné au niveau Élément Constitutif

Projet transversal	1.5	Semestre 2	8
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Projet transversal

ECTS : 1.5

Semester: Semestre 2

Detail

Directed study: 8

Project : 15

Language(s) of instruction

Français

Remote teaching

non

Type of assessment

Evaluation Continue non Intégrale

Connaissance du Milieu Professionnel II	10	Semestre 2	6
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Connaissance du Milieu Professionnel II

ECTS : 10

Semester: Semestre 2

Detail

Directed study: 6

Project : 210

Language(s) of instruction

Français

Remote teaching

non

Programme/contents

Le but de cet enseignement est d'avoir une meilleure connaissance de la méthodologie de la recherche par la réalisation d'un stage en laboratoire ou dans une entreprise (start-up ou R&D). Ce stage d'une durée de 7 à 8 semaines (200h max) devra s'inscrire à l'interface des sciences de la vie (biomécanique, physiologie, neurosciences comportementales) et des sciences pour l'ingénieur (conception, modélisation par l'approche système, traitement du signal,...). Le travail du stage devra amener l'étudiant(e) à analyser l'influence d'un produit, d'une méthodologie sur le mouvement humain à partir de système de mesures adaptés. Pour le stage en laboratoire, il devra porter sur un sujet en rapport avec les thématiques développées au sein des laboratoires adossés à la formation (cf. FeDeV). Le laboratoire CIAMS proposera notamment une liste de stages potentiels en début d'année universitaire. Pour le stage en entreprise, une liste de structures d'accueil potentielles sera fournie en début de M1 (Ergonomie, Handicap, Exosquelette, Sport et technologie, Systèmes de mesure du mouvement).

Learning objectives

Stage de recherche de Master 1

Type of assessment

Evaluation Continue non Intégrale

Teaching Location(s)

ORSAY
EVRY

Contact

- **Samuel Hybois**
MCF
- **David RUDRAUF**

<http://www.universite-paris-saclay.fr/formation/master/staps-ingenierie-et-ergonomie-de-lactivite-physique/m1-ingenierie-data-science-mouvement-humain>