



Our Research laboratories



A stronger link between research, training and innovation

Le Mans Université is developing diversified and quality research activities backed by laboratories that are open to societal issues. These laboratories, several of which are associated with the CNRS, enjoy national and international recognition.

Central to the strategy of Le Mans Université is the creation of thematic and/or interdisciplinary institutes, which aim to promote the synergy of 3 key strengths: research, training and innovation (scientific and educational).

390 researchers
and teachers-researchers

10 doctoral
schools

260
PhD students

81 technicians, engineers
and administrative staff

🔍 15 LABORATORIES

6 mixed University-CNRS research units

- Laboratoire d'Acoustique de l'Université du Mans (LAUM) - UMR CNRS 6613
- Institut des Molécules et de Matériaux du Mans (IMMM) - UMR CNRS 6283
- Laboratoire de Planétologie et Géodynamique de Nantes - Le Mans (LPG) - UMR CNRS 6112
- Espaces et Sociétés (ESO) - UMR CNRS 6590
- Temps, Monde, Sociétés (TEMOS) - UMR CNRS FRE 2015
- Centre de Recherche en Archéologie, Archéosciences, Histoire (CRéAAH) UMR CNRS 6566

9 research centres

- Laboratoire d'Informatique de l'Université du Mans (LIUM) - Research group 4023
- Mer, Molécules, Santé (MMS) - Research group 2160
- Laboratoire Manceau de Mathématiques (LMM) - Research group 3263
- Motricité, Interactions, Performance (MIP) - Research group 4334
- Centre de Recherche en Education de Nantes - Le Mans (CREN) - Research group 2661
- Violences, Innovations, Politiques, Socialisations et Sports (VIPS²) - Research group 4636
- Groupe d'Analyse des Itinéraires et Niveaux Salariaux (GAINS) - Research group 2167
- Laboratoire de droit de l'Université du Mans (THEMIS-UM) - Research group 4333
- Langues, Littératures, Linguistiques des Universités d'Angers et du Mans (3L.AM) - Research group 4335



DOCTORAL SCHOOLS

Le Mans Université has 260 PhD students supported by 10 inter-regional and thematic or multidisciplinary doctoral schools.

| The Le Mans Doctoral Centre

In coordination with the UBL Doctoral College, the Le Mans Doctoral Centre:

- offers cross-disciplinary training courses to the PhD students to further develop their transferable skills,
- ensures the coordination of the ten Doctoral Schools of the site and a local service to doctoral students, their supervisors and research units
- organizes events to promote doctoral research

It has an administrative centre and a Council in which the representatives of the doctoral schools, research units and PhD students sit every month.

Its objectives

- Overseeing of PhD students and PhD holders (registration, training, defence, filing and archiving of thesis manuscript, follow-up the career of PhD graduates, etc.)
- Cross-disciplinary training programmes whose diversity allows each doctoral student to develop the skills needed for its future career
- Award of doctoral contracts funded by Le Mans University and Le Mans Métropole and award of additional activities (teaching,...)
- Support for national and international mobility (PhD students attending conferences, PhD students enrolled for international co-supervision)
- Organization of events: Forum Jeunes Chercheurs (*Young Research Forum*), Ma thèse en 180 secondes (*Three minutes thesis*)

The Doctoral Schools

Arts, Letters & Languages doctoral school

ed-all.u-bretagne.fr

Langues, Littératures, Linguistique des Universités d'Angers et du Mans - 3 L.A.M

Law & Political Science doctoral school

ed-dsp.u-bretagne.fr

Laboratoire de Droit (THEMIS-UM)

Ecology, Geosciences, Agronomy & Food Sciences doctoral school

ed-egaal.u-bretagne.fr

Laboratoire de Planétologie et de Géodynamique - LPG

Education, Language, Interactions, Cognition, clinical doctoral school

ed-elic.u-bretagne.fr

Centre de Recherche en éducation de Nantes - CREN
Laboratoire Motricité, Interactions, Performance - MIP

Matter, Molecules, Materials doctoral school

ed-3m.u-bretagne.fr

Institut des Molécules et Matériaux du Mans (IMMM)

Mathematics & ICST (Information and Communication Science and Technologies) doctoral school

ed-mathstic.u-bretagne.fr

Laboratoire d'Informatique de l'Université du Mans (LIUM)
Laboratoire Manceau de Mathématiques (LMM)

Marine & Coastal doctoral school

ed-sml.u-bretagne.fr

Laboratoire Mer, Molécules, Santé (MMS)

Economics and Management doctoral school

ed-edge.u-bretagne.fr

Groupe d'Analyse des Itinéraires et Niveaux Salariaux (GAINS)

Engineering Sciences doctoral school

ed-spi.u-bretagne.fr

Laboratoire d'Acoustique de l'Université du Mans (LAUM)

Societies, Time, Territories doctoral school

ed-stt.u-bretagne.fr

Temps, Monde, Sociétés (TEMOS)

Centre de Recherche en Archéologie, Archéosciences, Histoire (CRéAAH)

Espaces et Sociétés (ESO)

Laboratoire Violences, Innovations, Politiques, Socialisations et Sports (VIPS²)

Events

Forum Jeunes Chercheurs (*The Young Researchers Forum*)

3 prizes to encourage doctoral research and to promote scientific excellence: Expose Ta Thèse (Present Your Thesis) competition, thesis award and thesis grant co-financed with Le Mans Métropole

Doctoriales

Inter-regional and inter-institutional seminar where PhD students define their future career plan and prepare their professional insertion

Ma thèse en 180 secondes (*Three minutes thesis*): international competition

Put forward a clear, concise and convincing presentation of your research project before a panel and the public





INNOVATION, PARTNERSHIP AND EXTERNAL RELATIONS DEPARTMENT (IPREX)

The Innovation, Partnership and External Relations Department (IPREX) supports researchers in projects implying collaboration with social and economic stakeholders. It also supports research projects containing a valorisation aspect and developed with a public or a private partner, financed by national, European and international institutional programmes.

Working in close collaboration with the Technology Transfer Acceleration Company (SATT Ouest Valorisation), the IPREX department supports and advises researchers in order to promote their projects through the most appropriate instrument: patent filing, software protection, maturation programme, creation of a start-up or Industrial Agreements for Training through Research.

This support can also be expressed through the establishment of a cooperation agreement in line with the scope of the project: student internship, research contract, advice service.

The IPREX department is the Le Mans Université entry point for public or private partners and ecosystem stakeholders whose objective is to create the synergy of means and resources to support the valorisation of research, training and innovation activities.

This department has received financial support from the Pays de la Loire Region and from the ERDF, through the FIL'INNOV regional programme, in coordination with the universities of Nantes and Angers.



Valorisation
of research results



Supporting
innovation



Promoting
our know-how

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 **Le Mans
Université**

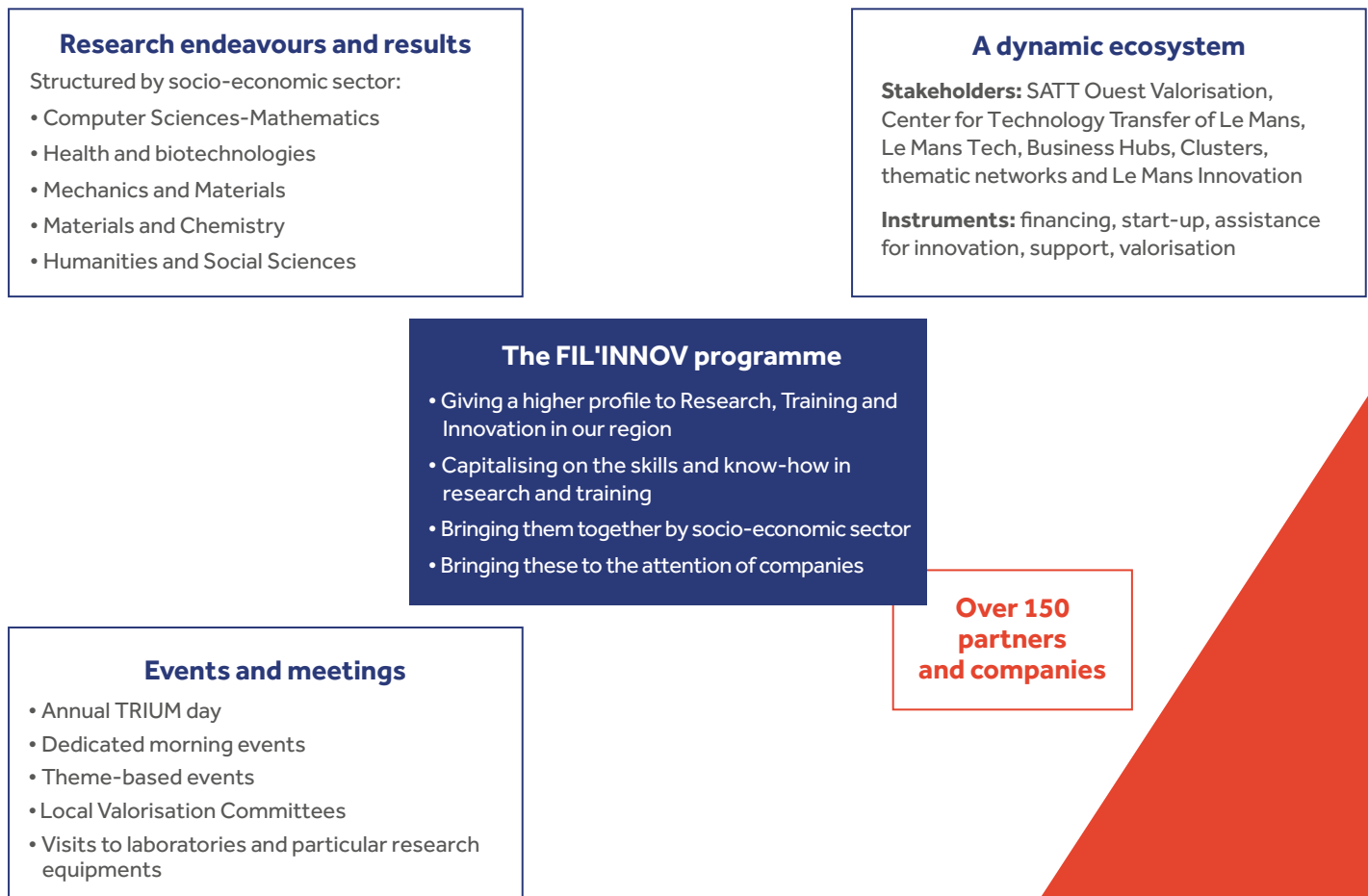
The IPREX Department contributes to the dynamic of innovation

The IPREX team monitors developments in relation to academic skills and the innovation needs of public and private partners. It collaborates in synergy with the stakeholders of the local ecosystem such as Le Mans Tech association (French Tech network) and Le Mans Innovation.



The FIL'INNOV regional programme

FIL'INNOV is a programme funded by the Pays de la Loire region and the ERDF. It helps to support and foster the valorisation of research activities and results in the Pays de la Loire region. It structures the research according to the socioeconomic sectors of the regional plan for innovation.





RESEARCH AND DOCTORAL STUDIES DEPARTMENT

The Research and Doctoral Studies Department supports the development, management and implementation of the institution's research policy and activities.

It supports the laboratories and teams in setting up and implementing individual or collaborative research projects funded by international, European and national institutional programmes. It is a cross-curricular administrative support mechanism for the management of human and financial resources dedicated to the activities of the research units.

It coordinates the pathways of doctoral students at institutional level and supports their professional integration. It implements the policy of dissemination of the institution's scientific and technical culture in its region.

It is organised on the basis of 3 fundamental objectives:



Support for research



Support for doctoral students
and for those who have obtained
their PhDs



Dissemination
of scientific culture



Events:

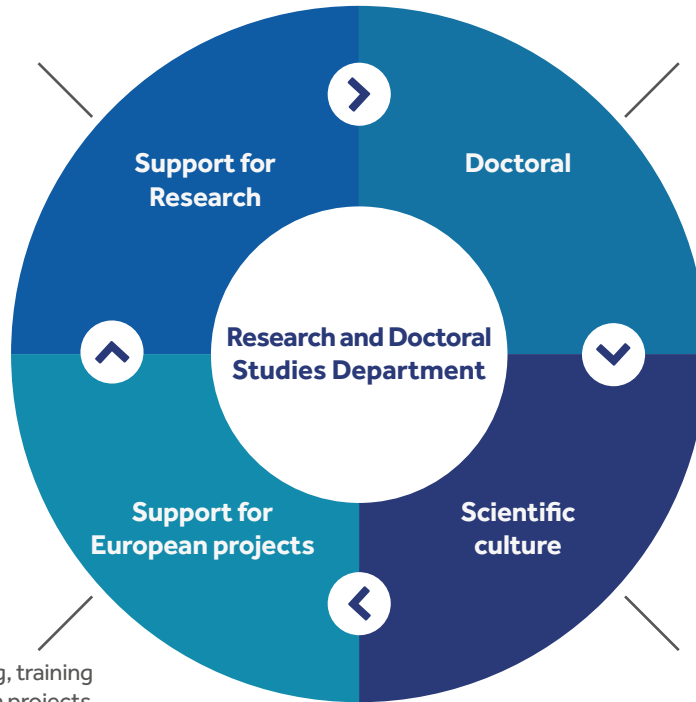
- European Researcher's Night
- Scientific Culture Week
- Ma thèse en 180 secondes
(*Three minutes thesis*)
- Sciences sur le pouce
(*Science on the move*)
- Forum Jeunes Chercheurs
(*Young Researchers Forum*)

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The Research Department provides support for the researcher throughout his career path

- Funding research and allocation of financial resources to research units
- Support with the set-up, monitoring and management of projects
- Recruitment of post-doctoral fellows
- Accreditation to Supervise Research
- Support for mobility of teacher-researchers and researchers

- Administration of the bi-regional Doctoral Schools on the Le Mans site
- Schooling of PhD students and monitoring of doctoral training
- Awarding of doctoral contracts
- Monitoring of international co-supervision of thesis
- Support for the professional integration of PhD graduate students



- Monitoring, awareness-raising, training and identification of European projects
- Help with setting up projects
- Help with the contractualisation and monitoring of contracts
- Survey of participation in European programmes dedicated to higher education and research

- Promotion of scientific careers for young people
- Projects for the dissemination and popularisation of sciences
- Training of doctoral students in the dissemination of scientific culture
- Organising actions and events

Cross-functional skills

- Support for the management of Research
- Monitoring, awareness-raising, detection, advice

- Project engineering
- Negotiation and preparation of contracts and agreements

- Management of projects
- Organising events





LANGUES, LITTÉRATURES, LINGUISTIQUE DES UNIVERSITÉS D'ANGERS ET DU MANS
(3L.AM) - Équipe d'Accueil 4335
LANGUAGES, LITERATURE, LINGUISTICS OF ANGERS AND LE MANS UNIVERSITIES (3L.AM) -
Research group 4335

Universities of Angers and Le Mans

The 3L.AM Research Center is one of the largest units in human and social sciences in the Pays de la Loire. The team brings together specialists in civilization, literature, philosophy, linguistics, film studies, new technologies and more generally digital humanities. Different eras and geographical and cultural areas are studied.

The Research Center's studies into children and young adult literature as well as on reading practices, from print to digital, are recognised at national and international levels.



115 people including

67 researchers and teachers-researchers | 38 at Le Mans

54 doctoral students | 27 at Le Mans

2 administrative and technical staff | 1 at Le Mans

postdoctoral fellows and/or engineers (depending on the currently funded programmes)



Partnerships

Organisation of conferences, symposia, presentations, exhibitions, in partnership with cultural sites or public and private institutions:

- **in Le Mans** : the City of Le Mans (cultural services, Médiathèque Louis Aragon (multimedia library): heritage fund), Les Cinéastes cinema, L'Espal and La Fonderie theatres, Le Carré Plantagenêt, the university library, the Maison des Sciences Humaines du Mans (Le Mans House of Humanities),...
- **in Angers** : Les 400 coups cinema, the Museum of Fine Arts, Le Quai theatre,...

Partnerships with the **Pays de la Loire**



Publize, online literary criticism review, founded on the initiative of Le Mans teachers-researchers.
revues.univ-lemans.fr

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3lam.univ-lemans.fr

3 areas of research

Images of the subject: traces, mutations, interactions

The subject and his/her interactions with his/her environment can be treated by literary, linguistic and civilisation scholars: relationships with others, with the natural or man-transformed surroundings, with the established order, with heritage, with historical and cultural heritage. Particular importance is granted to questions of language and terminology, including through the tools and methods of the sciences of documentation and the digital humanities.



Conflicts: history(ies), writings, representations

Conflicts highlight the social and political values of a society. Researchers revisit the history of conflicts in light of literary, cinematographic and artistic works which bear the imprint of political, historical and cultural debates. They put into perspective socio-historical movements that have developed in specific national contexts in order to identify common phenomena and recurring patterns.



Youth cultures on the move: practices, productions, reception

Youth cultural practices have undergone a significant number of changes in modern times: social or philosophical evolutions, changes in themes (educational, moral, aesthetic), in media (books, traditional games, video games, cartoons, etc.), in the areas and means of distribution, in the modes of reception (enlargement of the readership, empowerment of the reader, changes in prescribers) and in the critical and theoretical analytical tools necessary for an open-ended study of this complex subject.



Interdisciplinary programmes

The 3L.AM aims to support individual research and to promote multidisciplinary collaborations through innovative collective projects. Highly motivated and dynamic in terms of collective research, 3L.AM is involved as a coordinator or main partner in several projects...



... at regional level

- The EnJeu(x) regional programme, Childhood and Youth
- AMICAE° Programme, Analyses of Innovative Educational Ideas in Culture and Art in an Open Europe
- Institute of Religious Pluralism and Atheism, IPRA
- GEDI Programme, Gender and sexist and homophobic discrimination



... at national level

- ANR "European Research Network" P-RECICH (Reading Europe: Contemporary Issues in Comparative and Historical Perspectives)



... at European level

- READ-IT (Reading Europe Advanced Data Investigation Tool) Joint Programming Initiative for Cultural Heritage: 5 European partners (2018-2020)



CENTRE DE RECHERCHES EN ARCHÉOLOGIE, ARCHÉOSCIENCES, HISTOIRE (CReAAH) - UMR CNRS 6566

CENTRE FOR RESEARCH IN ARCHEOLOGY, ARCEO-SCIENCES, HISTORY (CReAAH) - UMR CNRS 6566

Universities of Nantes, Rennes 1, Rennes 2 and Le Mans, Ministry of Culture, CNRS

Archaeology (*archaia*) and history (*historiè*) are the sciences that study the past. They were forged and practised in the 5th century B.C. by Herodotus and Thucydides. They seek to understand ancient human societies through material vestiges, artefacts or ecofacts, and textual and illustrated/iconographic documents. This knowledge makes it possible to take a long-range and explanatory look at current societies. The laboratory studies the societies of Antiquity and the Middle Ages and more specifically addresses the themes of landscapes and the environment, colonisation and interchanges, cultural and social identities.



140 people including

77 researchers and teachers-researchers | 6 at Le Mans

30 doctoral students | 10 at Le Mans

33 administrative and technical staff | 3 at Le Mans



Partnerships

- Close cooperation with other French, European and international laboratories, including in Italy, Romania, Greece, Israel, Morocco, Australia and Spain.
- Close partnerships with Cultural Affairs Directorates, Regional Archaeology Services, Heritage, Culture and Archaeology departments of local authorities, particularly in Western France, INRAP, ADRAMAR, private archaeology companies (Archeodunum, Dendrotech, Evéha, Hades), the ONF (National Forestry Office), the natural parks of Normandy-Maine and Baronnies provençales, French schools abroad.



Robotic laser tacheometer, Atlantic and Mediterranean charcoals collection.

The scientific positioning of the laboratory is situated at the interface of Humanities and social science and biological, chemical and physical earth sciences in order to develop archaeosciences.

The projects carried out have strong territorial roots (Ancient walls of Le Mans, medieval Mainiote fortifications, habitat and activities in the forest of Perseigne/Bercé).

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6 research teams including 3 represented at Le Mans



Societies, cultures, identities

Collective reflection is based on a social history and historical anthropology approach to social and cultural identities understood as the cultural hallmark(s) characterising an individual or a group of individuals by determining common behaviour or practices. Three unifying themes are emphasised: the name, the body and the rank. The construction of these identities is done through norms identified in particular by prosopography thanks in particular to epigraphy, but also with regard to deviations from the norm. The study of bodies outside the norm (disability, physical violence against persons) is a particular focus.



Societies, environments and climates

The team looks at the current landscape as the legacy of a long series of close relationships between societies and their environments, not only as a biological object, but also as a social object. At the interface of cultural archaeology, history, ethnology, mythology and environmental archaeological sciences, it is a question of understanding the evolution of the inherited landscape forms, while at the same time being selective about the impact of climatic variations on the environments and those of cultural changes. This scientific bias involves a long-term diachronic approach and recourse to a wide variety of skills (geohistory, geoarchaeology, geomorphology, geomythology, xylology, anthracology, ecology, botany and archaeo-entomology).

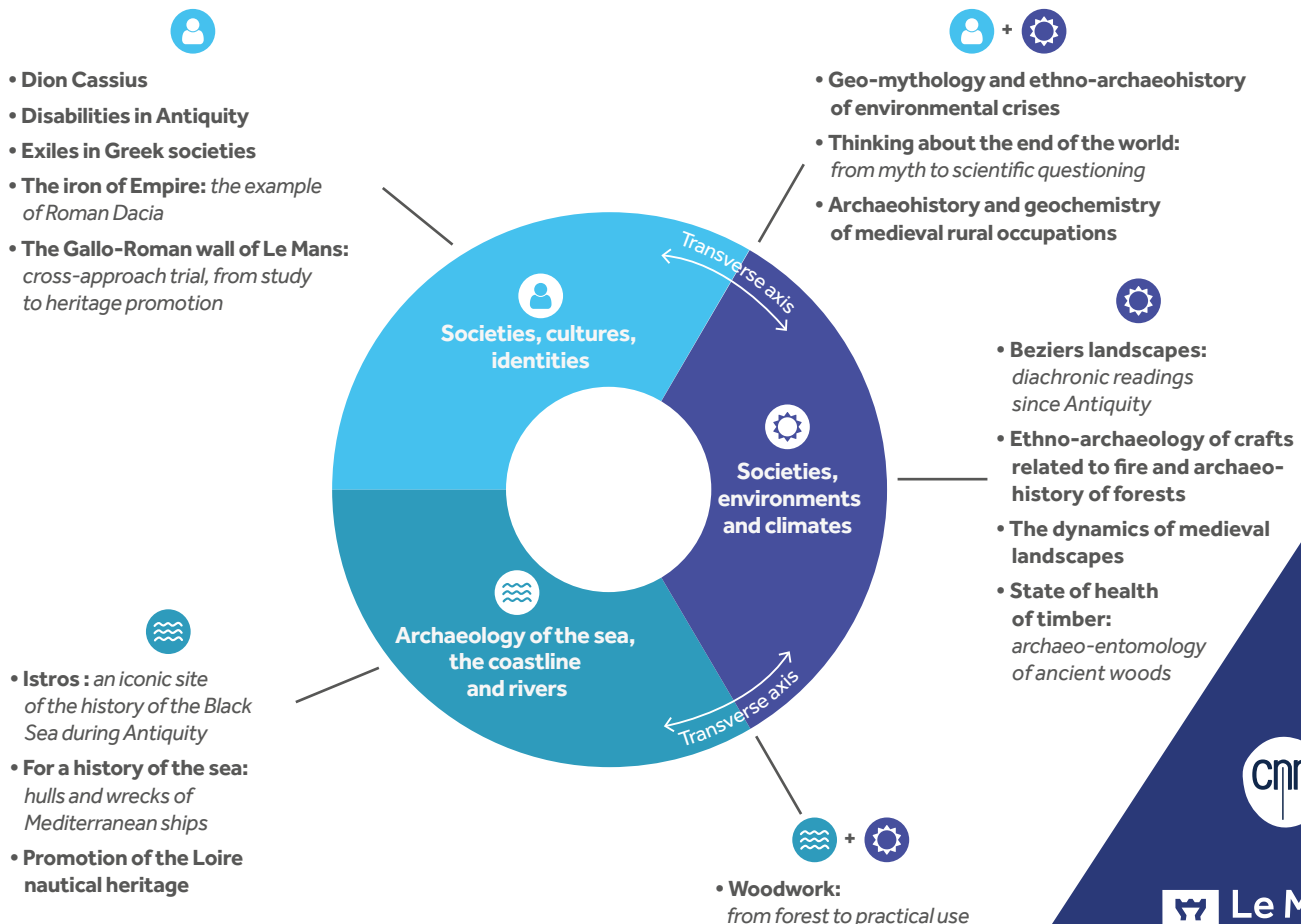


Archaeology of the sea, the coastline and rivers

Researchers work mainly in the Mediterranean in order to understand the processes of colonisation, settlement and land and sea trade in Antiquity through the comparison of textual, epigraphic and archaeological information. Excavations are carried out both in coastal and undersea environments to gain a better understanding of shore and coastal systems and to better understand the history of uses, men and techniques related to the sea. Investigations began around the river waterways of the Loire region.



12 research operations and 4 cross-disciplinary axes





CENTRE DE RECHERCHE EN EDUCATION DE NANTES (CREN-Le Mans) - Équipe d'Accueil 2661
NANTES RESEARCH CENTRE IN EDUCATION (CREN-Le Mans) - Research group 2661

Universities of Le Mans and Nantes, ESPE Pays de la Loire

The CREN-Le Mans site brings together language science researchers specialising in the teaching of languages, French as a foreign language, in sociolinguistics, IT, educational sciences, and in information and communication sciences. The researchers are involved in research topics related to educational innovation, whether digital or not: appropriation, dissemination and analysis of new training mechanisms in support of approaches relating to bi-multilingual education.



28 people including

17 researchers and teachers-researchers | 15 at Le Mans et 2 at Laval
1 Emeritus professor
9 doctoral students
1 administrative and technical staff"



Partnerships

Collaborations with companies: ST Microelectronics, SOA/SARP, AFaLaC, etc.



The members of the laboratory have developed important relationships with the parties involved with National Education, including within the framework of the Bac-3 / Bac +3 liaison programme.

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Two research themes at Le Mans and Laval

The research carried out within CREN-Le Mans is developed around the cross-curricular issue of innovation in education and in the teaching of languages, in accordance with the two topics associated with the structuring of the CREN laboratory:

Design of training and information via digital

Appropriation of publicised training strategies and devices

The work focuses on information and communication technologies for education and training, instrumental genesis, the study of uses and the mediation of knowledge. The research addresses the analysis of existing devices or on the design, development and implementation of digital devices for a variety of audiences and training contexts: digital environments in middle schools and lycées, educational uses of digital tablets, tutoring interfaces, tactile media for those with autism, software agents. They target the design methodologies and the methods of appropriation by stakeholders from the perspective of a social impact (evolution of the training proposition, training of the training professionals).



Multilingualism, educations, societies

The research activities focus on multilingualism, multilingual and intercultural education, and language education policies. They can be seen in the context of a broader schooling/inclusive education issue associated with the question of giving educational/formative consideration to linguistic and cultural plurality in the teaching-learning of languages, in particular French as a common and integrating language, at school with pupils, but also in the field of language training for migrant adults in social and professional integration.

Educational questions also relate to schooling inequalities coupled with the sociolinguistic question of the statutory inequality of languages, the impact of diminution or "minorisation" on the practices and representations of learners, children or adults involved in social, linguistic and cultural mobility. The current research work forms part of the regional Programme Enjeu[x] (Regional Child/Youth Programme), Pays de la Loire, Axis 3, Theme 3: Multilingual imaginaries between families and school, and in the RTI Europa Alliance, AMICAE programme, Element 2: School, multilingualism, migrations.



Key words

- Language instruction
- IT environments for human learning
- Linguistic policies
- Multilingualism
- University teaching
- Sociolinguistics
- Artificial Intelligence and Embedded Systems
- Information and communication sciences
- Educational sciences
- IT and communication uses and technologies for teaching and training





ESPACES ET SOCIÉTÉS (ESO), LE MANS - UMR CNRS 6590

SPACES AND SOCIETIES (ESO) - UMR CNRS 6590

Universities of Angers, Caen, Nantes, Rennes and Le Mans

The laboratory gathers geographers, regional and urban planners and researchers from other disciplines (sociology, environmental psychology, architecture).

From its historic roots in social geography, the UMR ESO's scientific project has expanded into the spatial dimension of social relations and the study of inequalities in all their forms, using all of the disciplines represented in the laboratory.

The scientific objective is to contribute to the awareness and understanding of the spatial aspect of societies.



280 people

120 researchers, professors and assistant professors | 17 at Le Mans

130 doctoral students | 22 at Le Mans

20 administrative and technical staff | 4 at Le Mans



Partnerships

Local governments and agencies, Non-Profit Organizations, private companies, Le Mans Métropole, Syndicats mixtes de Pays (Le Mans, Haute Sarthe), Syndicats mixtes de Schéma d'aménagement et de gestion des eaux (Mayenne, Sarthe amont, Huisne), Pôle d'équilibre territorial et rural du Perche, Direction Départementale des Territoires (Sarthe, Mayenne), Conseil d'Architecture, d'Urbanisme et de l'Environnement, Chambres consulaires, Agence de l'Environnement et de la Maîtrise de l'Énergie, Agence française de développement, Processing companies - management of waste, commercial distribution and promotion and urban planning companies (Eiffage, SETEC).

International collaborations are particularly dynamic with Tunisia, Cameroon, Algeria, Morocco, Brazil, Canada and China.



- Equipment: two drones registered with the CNRS and a large-format A0 printer
- Multidisciplinarity: Geography, urban and regional planning, sociology, environmental psychology and Architecture and urban designer
- From local territorial studies to international development projects

Member of TourismLab, Research Training and Innovation Institute in Pays de la Loire

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Research axes and themes

Researchers at the ESO Le Mans laboratory are more specifically developing several themes around sustainable development and the socio-ecological transition of territories.

Environnemental studies and public policies

The main objective is to encourage the territories to take better account of the environment, particularly with regard to energy, greenhouse gases and water supplies. The researches are focused on territorial policies applied to urban planning, local development, natural and cultural heritage, waste and on the circular economy, biodiversity, forests and agriculture.

The laboratory characterises and models the biophysical impacts of stakeholder practices at the level of territories or watersheds.



Urban planning and local development

The new social and political issues (housing, governance, @-governance and citizenship, trade, mobility, aging, segregation etc.) lead to the design of new strategies for planning and evaluation of territorial policies in conjunction with many local communities.

Social identities, gender and life experiences

By focusing on a micro-social entry point the research moves from individuals and groups to look at space and the relation to space. The aim is to appreciate how the courses and trajectories of life, the social and gender provisions influence or even structure the spatial practices. Social representations and experiences of space, as well as the configuration of the space, also come into play.



■ ESO laboratory topics particularly developed at Le Mans





GRUPE D'ANALYSE DES ITINÉRAIRES ET NIVEAUX SALARIAUX (GAINS) - Équipe d'Accueil 2167

GROUP FOR THE ANALYSIS OF ITINERARIES AND WAGE LEVELS (GAINS) - Research group 2167

GAINS consists of two teams: one in Economic Sciences (EURESEMans) and the other in Management Sciences (ARGUMans). The former works in macroeconomics and on the labour market, as well as on the analysis of risk and the demand for insurance or social protection linked to them. The latter develops its research in the study of organisations, accounting, control and auditing, marketing and the social and solidarity economy.

In 2008, GAINS was a founding member of the CNRS research federation "Travail, Emploi et Politiques Publiques - Institute for Labour, Employment and Public Policies" (TEPP) which now includes 10 laboratories.



53 people including
37 teachers-researchers
15 doctoral students
1 administrative and technical member of staff



Partnerships

- with national and international researchers
- with national and international institutions (Central Banks, IMF, ILO, ECB, Compagnie Régionale des Commissaires aux Comptes (French Institute of Statutory Auditors), Ordre des Experts Comptables de la Sarthe (Sarthe Association of Registered Accountants, etc.)
- and companies (COVEA, MGEN, MAIF, Fédération Nationale de la Mutualité Française, Mutualité Pays de la Loire, etc.)



- Initiator of the PANORisk project (development of decision-making support tools), supported by the Pays de la Loire Region
- Holder of the Chair in Social and Solidarity Economics, the Chair in Accounting-Control-Audit and the Chair in Computer Science and Econometrics of Insurance.

Member of the Institute of Risk and Insurance (IRA), supported by Le Mans Université

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2 research teams

EURESEMans - Le Mans Université Research Team In Economic Sciences

Initially centred around issues relating to the operation of the labour market and the setting of salaries, it has gradually added to these themes, then broadened them to include analysis of public policy, analysis of the risks inherent in the operation of the labour market, as well as the study of the demand for insurance and social protection related to occupational risks. This team has developed skills in modelling as well as in econometric techniques or in simulation methods.

These aspects are today focused around two axes:

- The "Evaluation of employment policies" axis
- The "Risks, decision and insurance" axis

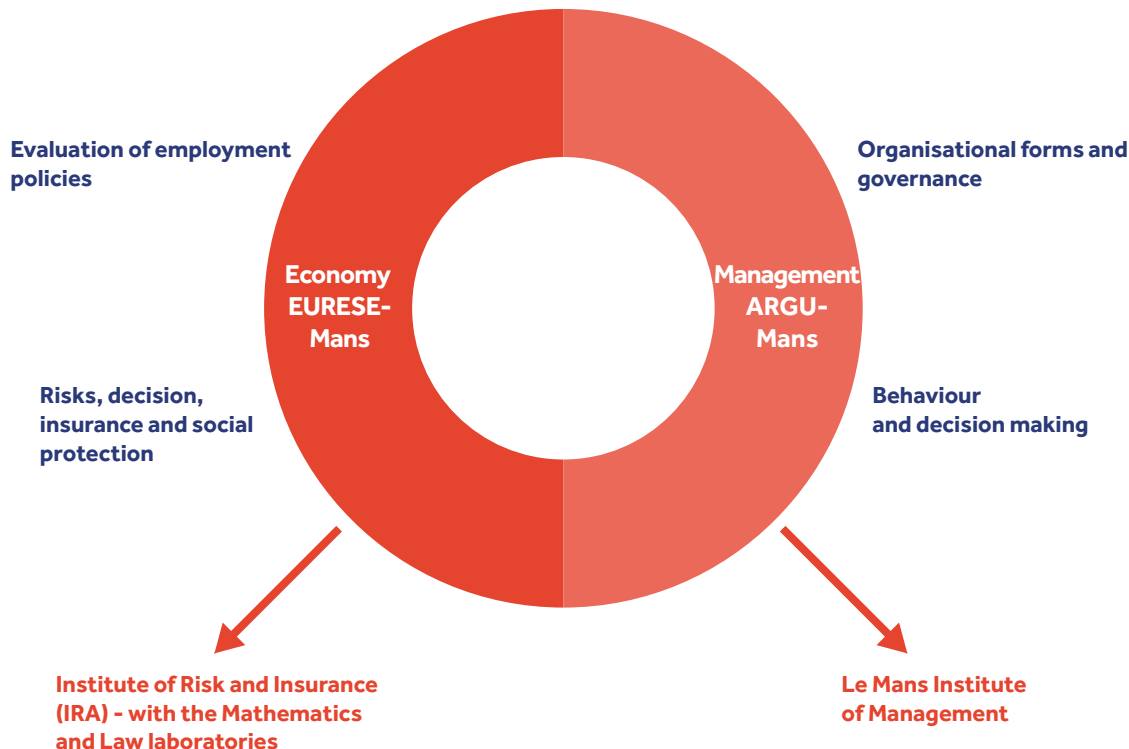


ARGUMans - Le Mans Université Management Research Workshop

It brings together expertise in the areas of the study of organisations and of their governance, corporate financing, accounting and management control, marketing and human resources management.

The work of the team is organised around two axes in the management field:

- The "Organisational forms and governance" axis focuses on the one hand on the impact of the environment on organisational forms (their management practices, their performances or the appearance of emerging forms), on the other hand on corporate governance and on its effects.
- The "Behaviour and decision-making" axis deals with the factors which, on the one hand, influence the decision-making process and the forms of this process, and, on the other hand, the choices made by the consumer, and his behaviour.





INSTITUT DES MOLÉCULES ET MATÉRIAUX DU MANS (IMMM) - UMR CNRS 6283
INSTITUTE OF MOLECULES AND MATERIALS OF LE MANS (IMMM) - UMR CNRS 6283

The research activities of the institute are based on well-established know-how and recognised expertise of chemists, physico-chemists and physicists in the domain of materials. From the synthesis of organic molecules to the study of the physics of ultra-short phenomena, including the design, characterisation and modelling of new materials, the IMMM covers all of the subject areas in the physico-chemistry of matter. The areas of application are wide-ranging and can involve bioactive compounds, functional materials for the fields of energy, environment and sustainable development, healthcare, food industry, plastics, soft matter and optics.



180 people including
76 researchers and teachers-researchers
60 doctoral students and postdoctoral fellows
30 administrative and technical staff



Partnerships

The laboratory collaborates with many other sites in France and internationally: Japan, Poland, Thailand, Ukraine, Mexico, Tunisia, Lebanon, Morocco, Vietnam & USTH Franco-Vietnamese University, Australia. The IMMM has also developed particularly dynamic relations with the socio-economic world: AREVA, ARKEMA, Bel, Danone, Hutchinson, Nestlé, Saft, Schlumberger, Solvay, STM, L'Oreal, Total, Unilever,...



State-of-the-art equipments in synthesis and formulation, microscopy, diffraction, local spectroscopies, radiation scattering, rheology, plasma, combined with innovative techniques constitute a unique and attractive instrumental platform at regional, national and international levels. All of this equipment is complemented by a platform for high performance computing (HPC).

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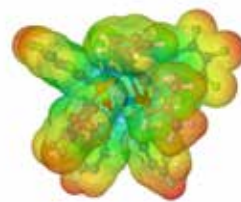


 **Le Mans
Université**

4 priority scientific fields

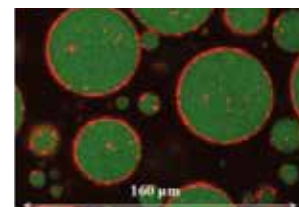
Organic Synthesis

The work in relation to Organic Synthesis focuses on the discovery and development of new reactions in organic chemistry, particularly in the area of cycloadditions, polar organo-metallics, diazo compounds and the promotion and valuing of bioresources. The fundamental research developed has applications in the field of healthcare, in particular for the synthesis of molecules for therapeutic purposes, and in molecular engineering.



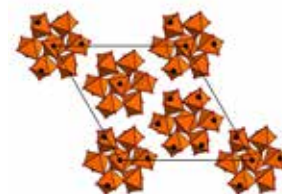
Polymers

The axes for research in relation to the Polymers theme are focused on the elaboration and study of the properties of polymer materials with offering functionalities of interest in bulk or for interfaces. These axes are founded on a set of complementary skills (chemists, physico-chemists and physicists) and a consequent range of instruments which enable the research theme, via a close association between basic research and applied research, to meet expressed needs in the fields of healthcare, energy, transportation and the environment.



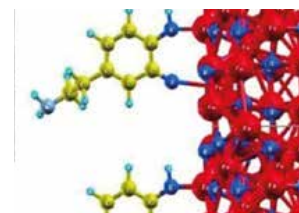
Inorganic materials

The materials, inorganic oxides and fluorides or hybrids, are elaborated in the form of micro or nano-sized powders, single-crystals, glasses, glass-ceramics or thin films. By determining the intimate arrangements of these materials at the atomic scale, a better understanding of their properties is obtained. The applications targeted include the fields of energy, environment and healthcare.

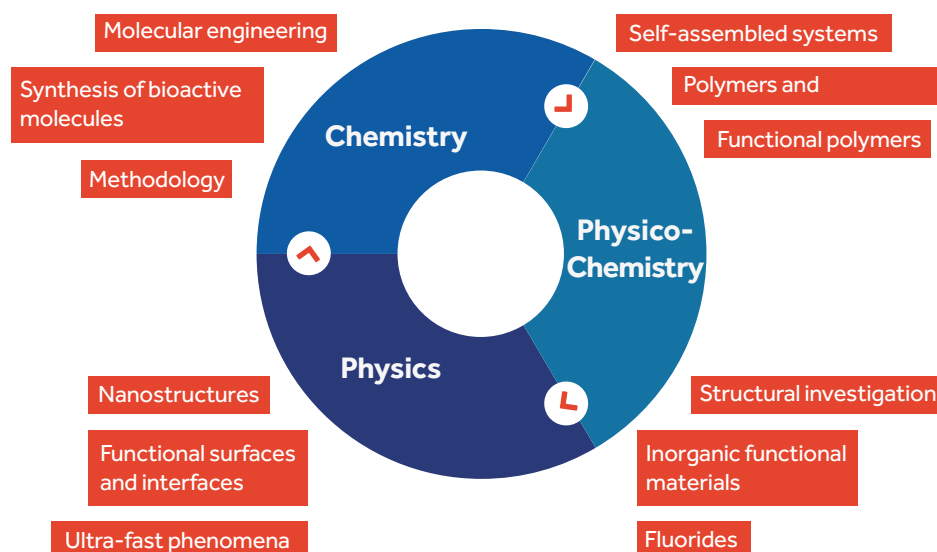


Physics of confined systems

The research conducted in relation to PCS, at the interface of the science of materials, condensed matter physics and soft and ultra-divided matter, aims to understand the phenomena which occur at the small scales of space and time. In particular, the main axis of this research, is the study of relations between the confinement, the structural organisation and the dynamics in materials for better knowledge of magnetic, electrical and molecular orders.



Research areas





LABORATOIRE D'ACOUSTIQUE DE L'UNIVERSITÉ DU MANS (LAUM) - UMR CNRS 6613
LABORATORY OF ACOUSTICS OF LE MANS UNIVERSITÉ (LAUM) - UMR CNRS 6613

Acoustics is the science of sounds. Acoustics is related to the production, transmission and reception of sound as well as its effects on living beings, the environment and matter. Acoustics is an integral part of the engineering and environmental sciences, health and life sciences as well as humanities and social sciences.

Investigations at the Acoustics Laboratory in Le Mans Université mainly focus on sources and sensors, acoustics and mechanics of materials, wave propagation in fluids and complex structures. Acoustic investigations aim at observing and quantifying physical phenomena, at analysing and modelling them using both mathematical and numerical methods. Applications cover a wide field of subject topics: noise reduction and vibration damping, evaluation and control of materials, sound quality...

The sectors of activity related to acoustics exhibit a large diversity: building, automotive, aeronautics, telecommunications, music and instrument making, entertainment industry, environment, medicine, etc.



150 people including

- 60 researchers and teachers-researchers
- 70 students and postdoctoral fellows
- 20 administrative and technical staff



Partnerships

LAUM actively cooperates with French, European (Great Britain, Spain, Sweden, Czech Republic, etc.) and International (USA, Canada, China, Brazil, Japan, etc.) laboratories. LAUM has also developed industrial partnerships with the Le Mans Centre for Technology Transfer (CTTM), SAFRAN, SNCF, Renault, PSA, Valéo, Orange Labs, etc.



Specific rooms equipped with test benches, **anechoic and semi-anechoic rooms**, optoacoustics and digital holography rooms, microtechnology room (clean room), etc.

Partner of Le Mans Acoustique Institute and member of the Institut d'Acoustique - Graduate School (PIA3 - ANR program).

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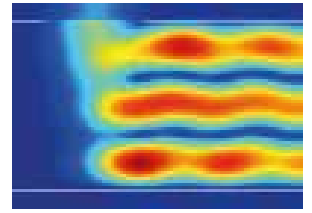


3 research groups

Materials group

This research group carries out investigations on acoustic propagation in complex environments (metamaterials, phononic crystals, granular, inhomogeneous, non-linear or porous materials, etc.). The work carried out addresses several fundamental aspects: wave-material interactions (non-linear acoustics, study of energy transfers, coupling, damage, wave control, inverse problem solving, signal processing, etc.).

This work also extends to applications such as the identification of properties, imaging, implementation of diagnostic tools, sound absorption, wave control, non-destructive evaluation and inspection).



Transducer group

This group is involved concerned with transducers (sensors, actuators, energy converters), the development of test benches (digital holography, 3D vision, metrology) and related signal and image processing. The studies carried out, both theoretical and experimental, are supported by sharing fundamental skills from the members of the group (acoustic, thermal, optics, magnetism, electrical engineering, signal processing, etc.) and their technological expertise (fine measurements, micro-manufacturing in a clean room environment).

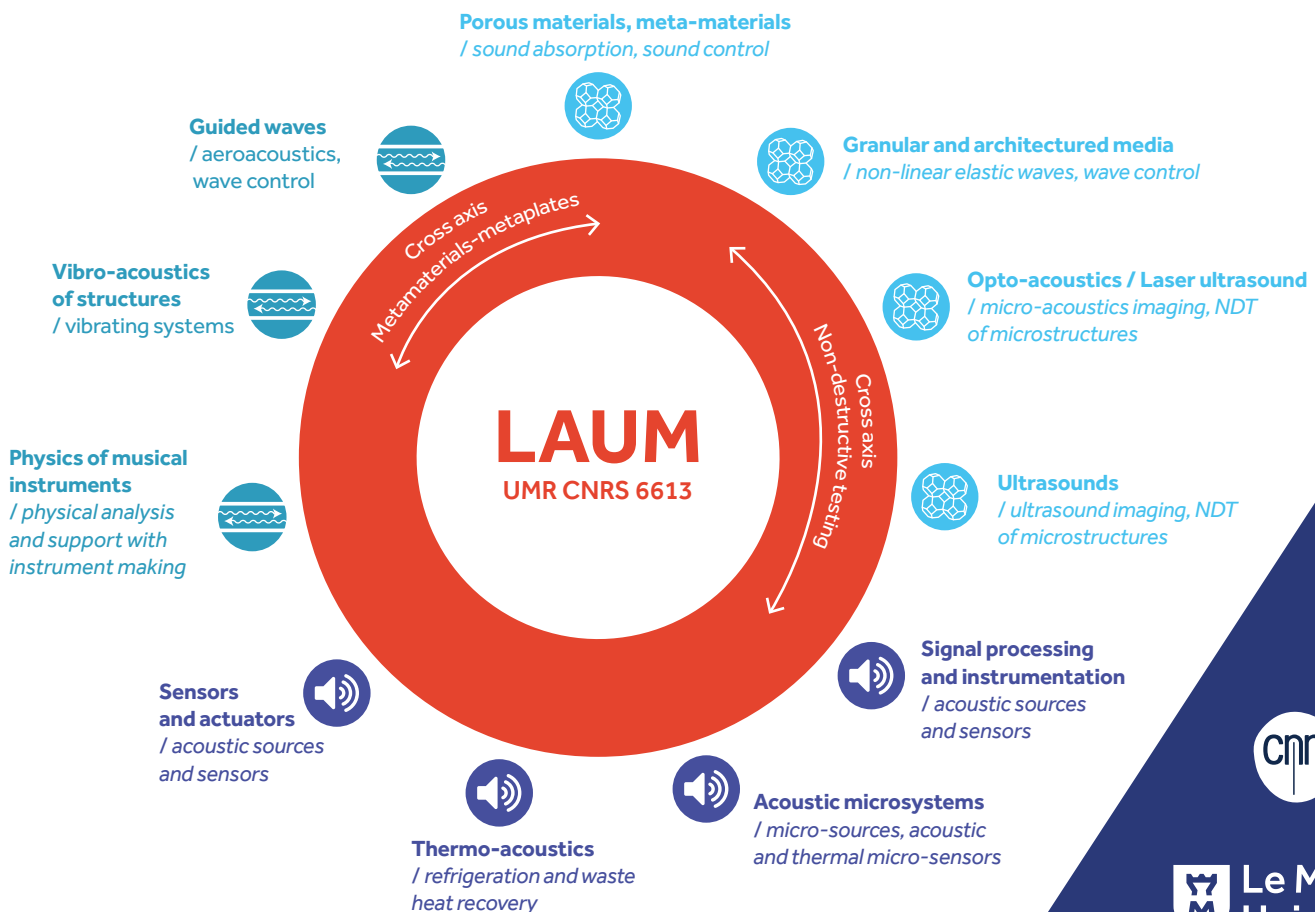


Waveguides and Structures group

This research group aims at investigating the propagation of waves in complex media in the entire range of audible frequencies. The research focuses on problems related to acoustic comfort, improvement of the sound environment and musical acoustics. The group carries out analysis of radiated sound from sound sources, whether desired (instrument manufacture) or not (aeronautics, radiation from vibrating structures, etc.), and propagation (urban acoustics, wave control in structured environments). Research works are carried out both from a fundamental point of view (analytical approaches and development of numerical methods) and an experimental approach (development of measurement and simulation systems).



11 research sub-topics and 2 cross-disciplinary axes





LABORATOIRE D'INFORMATIQUE DE L'UNIVERSITÉ DU MANS (LIUM) -
Équipe d'Accueil 4023
COMPUTER SCIENCE LABORATORY OF LE MANS UNIVERSITÉ (LIUM) - Research group 4023

The Computer Science Laboratory, which is located in both Le Mans and Laval, is structured around two topics: TEL (Technology Enhanced Learning) and language processing (speech recognition and synthesis, speaker characterization, semantic extraction and machine translation).

LIUM is one of the few European laboratories able to perform speech translation in near real time, and it offers innovative applications in the field of educational technologies, e-learning and serious games. LIUM is internationally recognized for its research works, as demonstrated for instance by the prestigious European Innovation Radar prize earned in 2016 for the development and industrial deployment of a technology dramatically reducing the costs of speech recognition.



60 people including
28 teachers-researchers
26 doctoral students and postdoctoral fellows
4 administrative and technical staff



Partnerships

LIUM's researchers actively cooperate with other French, European and international laboratories.
LIUM has also established industrial partnerships with Airbus, Orange Lab, AlloMédia, OpenClassrooms, Symetrix/SBT and 44screens.



Computing cluster with 1000 CPU cores and, 60 GPUs.
Experimental room for TEL research work (audio and video recording)
Software and corpus: SideKit/s4d, TEDLium, nmtptorch, JemlInventor, Moggle, Hop3X, UTL, Legadee, TraVis

Member of the Institut Informatique Claude Chappe (IC2), supported by Le Mans Université
Member of Atlanctic 2020 Research-Training-Innovation Institute in Pays de la Loire

Director: Sylvain Meignier | dirlium@univ-lemans.fr
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www.lium.univ-lemans.fr

2 research teams

Engineering of Technology Enhanced Learning (IEIAH in French)

The aim of the team is to develop computer systems dedicated to teaching with the help of Model-Driven Engineering (MDE) and Human Computer Interaction (HCI) techniques: the models explicitly include pedagogical scenarios and evolve depending on the analysis of pedagogical uses. The team offers teachers/users dedicated methodologies and languages to help them design, revise or adapt their computing environment for learning.

In particular, the team works on authoring tools, learning analytics and advanced interactions for learning (serious games, mixed reality, mobile learning, etc.).

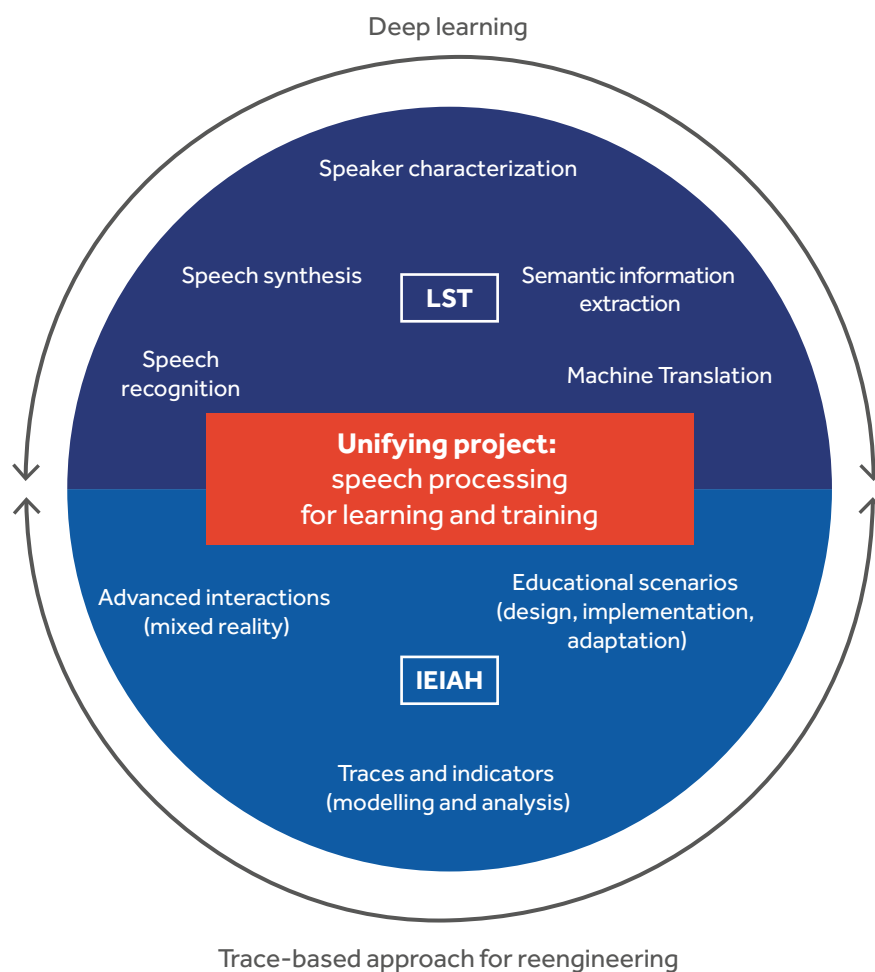


Language and Speech Technology (LST)

The team articulates its research activities in the field of natural language processing (NLP) around five axes: automatic speech recognition, text to speech synthesis, speaker characterization, semantic information extraction and machine translation. Historically working with statistical approaches, the team is now specialized in deep learning applied to natural language processing



5 research areas of research and 1 unifying project





LABORATOIRE MANCEAU DE MATHÉMATIQUES (LMM) - Équipe d'Accueil 3263

MANCEAU MATHEMATICS LABORATORY (LMM) - Research group 3263

The laboratory carries out research that is both theoretical and also applied to finance, insurance and to energy problems. This research is structured around 2 axes: one axis on probabilities and financial mathematics and one axis on the statistics of processes and applications. The aim of the work carried out within the LMM is to model random phenomena and to develop statistical and numerical methods in order to gain a better understanding of these "uncertain" phenomena. This relates to "extreme" events in insurance and climatology, and the evolution in the price of an insurance or financial product, for example.



22 people including

- 12 researchers and teachers-researchers and 1 associate professor
- 9 doctoral students and postdoctoral fellows
- 1 administrative and technical member of staff



Partnerships

- École Polytechnique, Laboratoire d'acoustique de l'Université du Mans (LAUM), University of Tunis, KTH (Stockholm), Shandong (China), Hong Kong, Kiev, Dallas, Moscow, Mexico City, University of Texas (USA), etc.
- Collaborations with the companies COVEA, EREN and EDF.



The laboratory is involved with 2 research projects supported by the Pays de la Loire Region: PANOrisk (development of decision-making support tools) and DEFIMATHS (promotion of mathematics in the west of France). It is also a partner of the ANR CAESARS project (renewable energy issues).

Member of the Institute of Risk and Insurance (IRA), supported by Le Mans Université

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2 lines of research

Probabilities and financial mathematics

The team has gained an international reputation in the field of Backward Stochastic Differential Equations (BSDEs). It also works with Stochastic Partial Differential Equations and Malliavin calculus for jump processes. The main applications relate to game theory, switching problems in investment choices, assessment of the pricing of financial or insurance products and issues around portfolio selection in the context of model uncertainties.



Statistics for processes and applications

The research themes, which are essentially theoretical, concern the inferential statistics of distribution processes and the statistics of fractional and/or long-memory processes. For example, work on the maximum likelihood estimation of the parameters of an autoregressive process directed by a stationary Gaussian noise and the study of the asymptotic properties of the estimators thus constructed. The application element of this mathematical statistics work relates to inertial central location systems - GPS sensor and work on various statistical aspects related to the electricity production of wind turbines.



The areas of applications



BANKING



INSURANCE



CLIMATOLOGY



NEW ENERGIES



SEISMOLOGY





GÉOSCIENCES LE MANS

5 associés au Laboratoire de Planétologie et de Géodynamique (LPG) - UMR CNRS 6112

LE MANS GEOSCIENCES

5 members associated with the Laboratory of Planetology and Geodynamics (LPG) - UMR CNRS 6112

The Le Mans Geosciences laboratory studies the interactions between rocks, fluids and geological deformations. These fluids can be found at the surface (water), within rocks, in porosity and/or fractures (water, gas, hydrocarbons), or in the form of viscous materials which will deform over various timescales: sand, clays, salt, magmas, etc.

The laboratory's researchers are interested in the effects of these fluids in various geological contexts through observations in the field, laboratory analyses and experimental modelling.

The fields of application range from the exploitation of reservoirs (geothermal, hydrocarbons) to the dynamics of ice sheets and glaciers or the building of mountain ranges.



12 people (5 members associated with the LPG - UMR 6112) including

- 7 researchers and teachers-researchers
- 3 doctoral students and postdoctoral fellows
- 2 administrative and technical staff



Partnerships

- 5 permanent members are associated to the LPG - UMR 6112 (Nantes - Angers)
- Collaborations with French and international laboratories (Norway, Canada, Argentina, etc.)
- Partnership with companies thanks to the thematics of the laboratory (Total, Engie)



The only laboratory in Europe specialised in the experimental modelling of geological deformation phenomena involving interstitial fluids and fluid overpressure.

Experimental modelling labs dedicated to the simulation of natural deformation processes via scaled physical models.

Thin-section preparation workshop

Director of Geosciences Le Mans: Alain Zanella | alain.zanella@univ-lemans.fr
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geosciences.univ-lemans.fr



3 lines of research including 2 in partnership with the LPG

Deformation and surface processes related to fluids

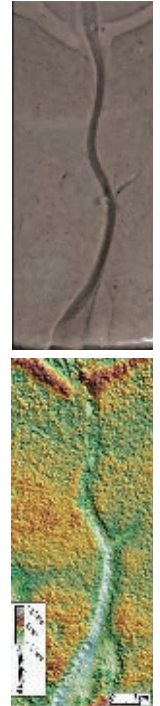
The first line of research is aimed at understanding the processes involved in the evolution of terrestrial surfaces and sediments transfer. Among the processes which shape surfaces, the Le Mans laboratory is particularly interested in the effects of subglacial meltwater generated during periods of climatic warming on glacier dynamics. The large amounts of meltwater produced during such periods alter ice the flow dynamics thereby contributing to their collapse. Meltwater is also responsible for tunnel valley formation that shows very specific morphological characteristics we are able to reproduce and characterise in the experimental lab.

Fluids under pressure and properties of reservoirs

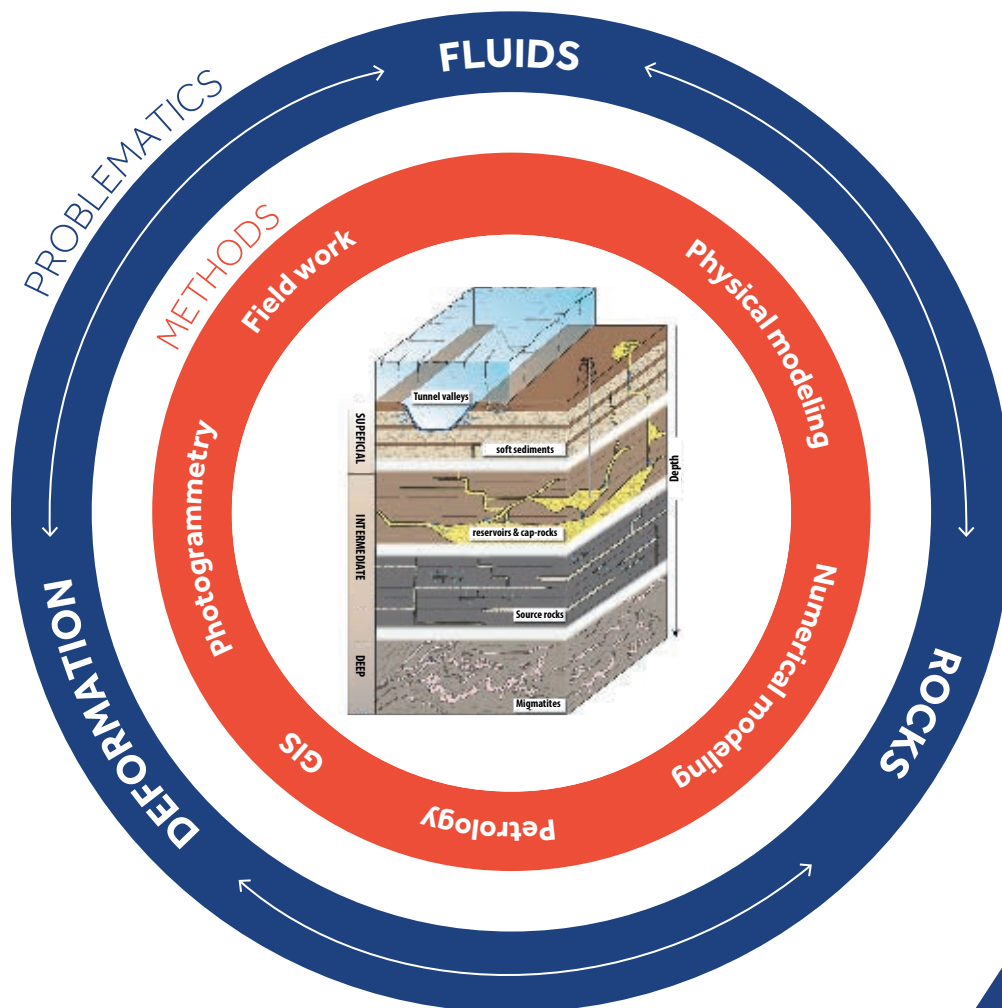
The second line of research relates to fluids under pressure present in sedimentary basins and their role in the evolution of the hydro-mechanical properties of reservoirs. Several types of phenomena are studied: hydraulic fracturing of source rocks during the generation of hydrocarbons, cover fracturing and remobilisation of sediments in the form of sand intrusions or mud volcanoes, remobilisation of clays within sedimentary reservoirs, mineralization associated with the circulation of fluids.

Orogenic processes

The last area of research focuses on the morphological evolution of orogenic prisms in contexts of tectonic convergence, in particular that of the Europe-Africa convergence (Alps, Tell Atlas, Tunisian Atlas, etc.). This theme is considered from the perspective of critical bevel theory, and aims to understand the complex interactions between mantle dynamics, crust rheology, spatial arrangement of deformations and processes of erosion.



Experimental modelling of a tunnel valley (T. Lelandais)





LABORATOIRE MOTRICITÉ, INTERACTIONS, PERFORMANCE (MIP) - Équipe d'Accueil 4334 *MOVEMENT, INTERACTIONS, PERFORMANCE LABORATORY (MIP) - Research group 4334*

Universities of Nantes and Le Mans

Movement is essential for Human to adapt to his physical, material and social environment. It helps to ensure vital functions (e.g. eating, drinking or communicating). The laboratory's research programme aims to obtain a better understanding of how human movement is produced from the musculo-tendon system, to the individual, right through to the inter-individual level. Through an interdisciplinary approach (life sciences, humanities), this programme aims to respond to major scientific and societal issues in the areas of sports performance, health and education.



45 people including

17 teachers-researchers and doctors of medicine | 5 at Le Mans
12 doctoral students and postdoctoral fellows | 4 at Le Mans
4 administrative and technical staff | 2 at Le Mans



Partnerships

Members of the laboratory actively collaborate with French researchers and laboratories (University Hospital of Nantes, Laboratory of Biomechanics, Paris; INSEP, Paris...), European (University of Bath, England) and International (University of Ottawa and University of New Brunswick, Canada; University of Auckland, New Zealand; University of Queensland, Australia).

The MIP also cooperates with various industrial partners (Direct Energie cycling team, LudHealth, etc.)



Chain of biomechanical analysis of human movement: three-dimensional kinematics by motion capture system; 3D dynamics by force platform; surface electromyography; stabilometry; treadmill with pressure sensors.

Director : François Hug (University of Nantes)
Head of the Le Mans site: Abderrahmane Rahmani | abdel.rahmani@univ-lemans.fr
Avenue Olivier Messiaen 72085 Le Mans cedex 09
mip.univ-nantes.fr

3 research themes

Production and estimation of the force

The work developed in this research theme is intended to quantify the efforts experienced and produced by the musculotendinous system during various motor tasks and to understand how they adapt to training, ageing or illnesses.

The originality of this theme is to be found in the development of non-invasive methods to characterise in vivo the contractile and/or visco-elastic properties of the structures involved in the production and transmission of muscle force.



Motor coordination

The work undertaken in this research theme is aimed at understanding how the nervous system coordinates muscles and segments in order to produce human movement and to determine the relationship between motor coordination strategies and the development or persistence of musculoskeletal and/or cognitive disorders.

The originality of this theme mainly lies in its interdisciplinary approach, i.e. neurophysiology, biomechanics and psychology.



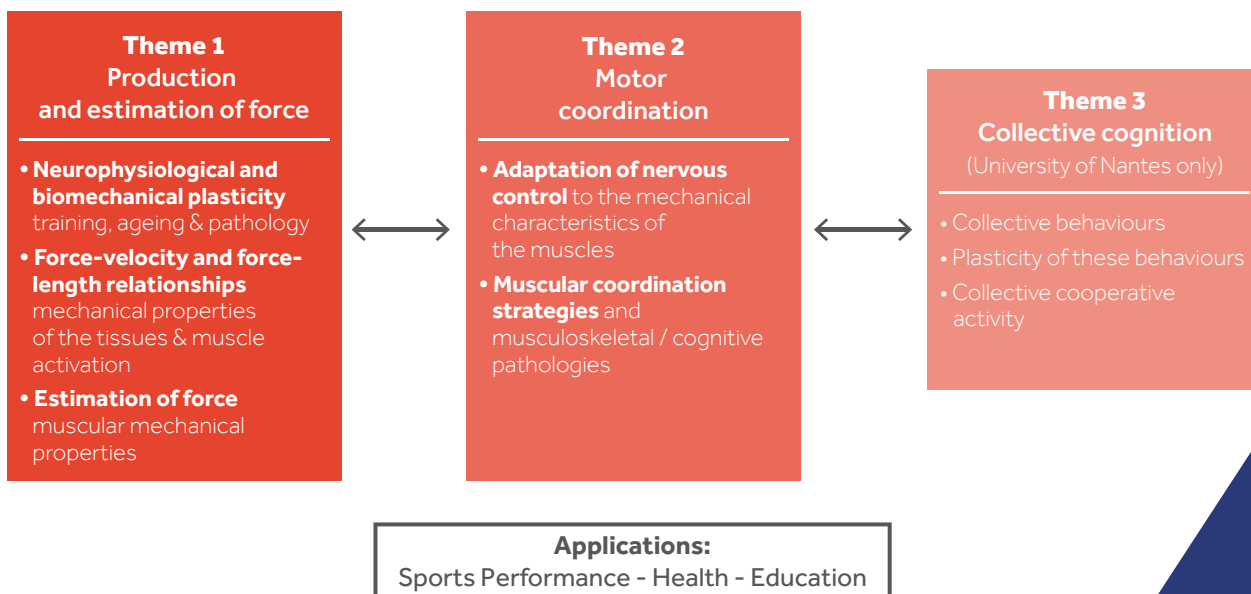
Collective cognition

The work undertaken for this topic addresses the production processes for coordinated collective behaviours and team performance and the mechanisms for collective learning in cooperation situations. The originality of this work resides in its focus on interpersonal adjustments, in their dynamic, situated, and self-organised dimensions. Subjective approaches to collective cognition are supplemented by behavioural approaches which together allow the description of different levels of analysis (e.g. individual, relational, collective).



Research operations

Optimisation of human movement





LABORATOIRE MER, MOLÉCULES, SANTÉ (MMS) - Équipe d'Accueil 2160 **SEA, MOLECULES, HEALTH LABORATORY (MMS) - Research group 2160**

Universities of Nantes and Le Mans, Université Catholique de l'Ouest

The scientific programme covers an integrated and sustainable management of coastal and estuarine marine ecosystems, particularly through the study of the disturbances which affect them, mainly due to human activities. A better understanding of the biodiversity and functioning of these ecosystems will lead to the identification of organisms interesting for the production of high added-value metabolites for industry and human health.



130 people including

53 teachers-researchers | 21 at Le Mans and Laval

55 doctoral students and postdoctoral fellows | 15 at Le Mans and Laval

22 administrative and technical staff | 3 at Le Mans and Laval



Partnerships

The members of MMS collaborate with many regional, national and international laboratories, as well as with industrial partners.



- Facilities for the microalgae cultivation, shellfish aquaculture, biochemical and physiological analyses, molecular and cellular biology
- Animal facility for studies relating to the use of microalgae in nutrition-health
- Bench for pulsed electric fields treatments for the biocompatible extraction of molecules of interest
- Thalassomics technical platform in Nantes, integrated into the Corsaire platform of BiogenOuest

Director: François Pouchus (University of Nantes)
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mms.univ-lemans.fr

5 research teams

Remote sensing and benthic ecology (RBE)

Le Mans - Nantes

This team studies the structure and functioning of coastal ecosystems. These ecosystems, which are among the most productive in the world, are exposed to significant threats: global climate change, pressures from human activities, pollution, invasive species. Research topics include benthic ecology, biodiversity, chemiodiversity and phytoplankton ecophysiology, bivalve aquaculture, food interactions within coastal ecosystems and remote sensing. At Le Mans, the team is particularly interested in blue diatoms from the genus *Haslea*, responsible for the greening of oysters.



Ecotoxicology of emerging contaminants in coastal and estuarine environments (ECEm)

Le Mans - Angers

The research focuses on the ecotoxicology of emerging contaminants (nanomaterials, microplastics, etc.) in coastal and estuarine environments. They aim to increase knowledge and develop assessment tools in order to improve the management of risk relating to the exposure of organisms to these contaminants. The integrative approach to the effects of chemical stress at different levels of biological organisation is particularly appropriate. Special attention is given to the responses of organisms to multiple stresses.



Metabolism, bioengineering of Microalgae Molecules and Applications (MIMMA)

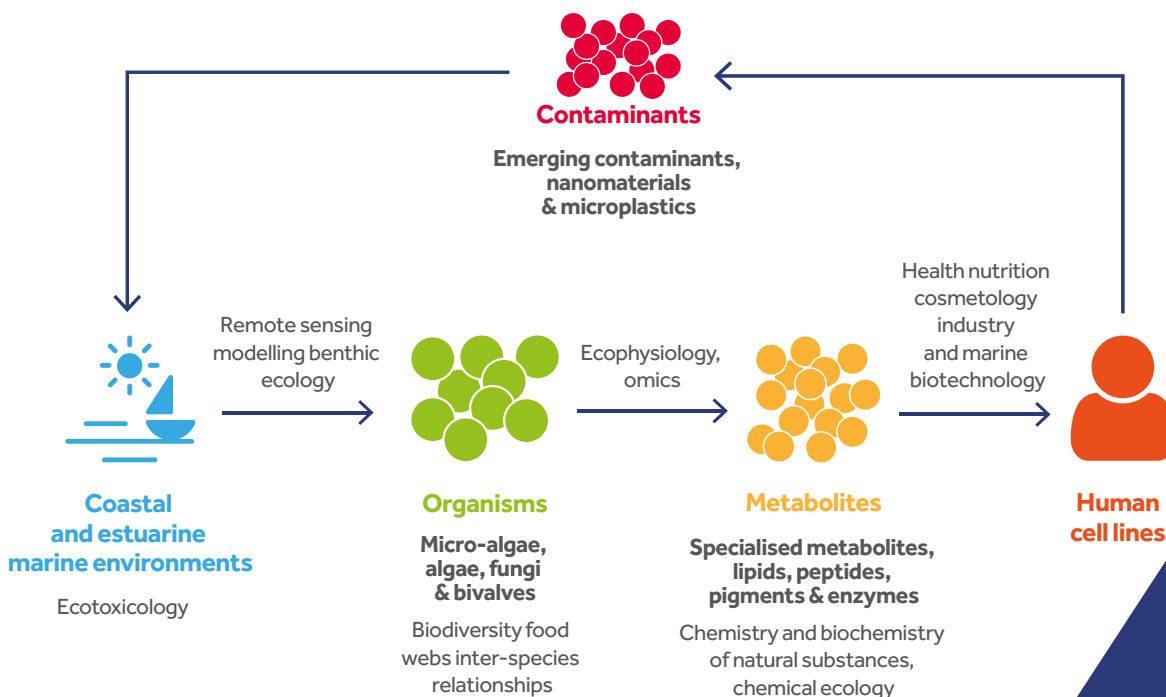
Le Mans / Laval

The roles of transcription factors in the regulation and the reorientation of the carbon metabolism in microalgae under conditions of stress constitutes the core of the research programme of the team. The understanding of these mechanisms should allow the controlled modulation of carbon fluxes within microalgae in favour of compounds of interest. The potential of these molecules in nutrition and human health, as extracts or purified, natural or modified, are assessed using cellular and/or murine models are tested. The team is also working on the development of innovative methods for extracting molecules from microalgae such as biocompatible extraction.



The **Chemiodiversity of marine fungi and enhancement (ChiChaMVA)** and **Application of marine metabolites in health, nutrition and cosmetology (ANC)** teams are attached to the Université de Nantes.

Knowledge and enhancement of the biodiversity of marine, coastal and estuarine ecosystems





TEMPS, MONDE, SOCIÉTÉS (TEMOS) - CNRS FRE 2015
TIME, WORLD, SOCIETIES LABORATORY (TEMOS) - CNRS FRE 2015

Universities of Angers, Le Mans and South Brittany

Research in history helps us to better understand the present in the light of the past, by dealing with sources that are often unpublished, whether archaeological, manuscripts or oral. The research topics of the TEMOS research team cover all periods, from antiquity to the present day, and echo several contemporary challenges. The research at TEMOS focuses on childhood and gender, coexistence and conflicts in social, political, and religious context, and on the construction of knowledge, in a continuous dialogue with contemporary issues.



120 people including

55 researchers and teachers-researchers | 13 at Le Mans

60 doctoral students | 10 at Le Mans

6 administrative and technical staff | 2 at Le Mans



Partnerships

The TEMOS laboratory collaborates with numerous universities both in France and abroad (Sheffield, Buenos Aires, Agadir, etc.) and several research units in the fields of social sciences, literature and languages.

The expertise of the team is made available to local authorities (the Pays de la Loire Region, the Sarthe Department), to local associations and to cultural establishments.



A strong link between research and teaching curricula from the "Licence" degree to the PhD (training in and through research).

A strong territorial involvement, particularly with actors in the cultural heritage sector.

Director: Yves Dénéchère (University of Angers)
Head of Le Mans team: Nathalie Richard | nathalie.richard@univ-lemans.fr
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3 main areas of research

Childhood, gender and archives of self: individualities and subjectivities in movements

The research carried out deals with the construction of the self and of the subject throughout history by prioritising two inputs: age and gender. The research addresses simultaneously the construction of collective identities, the formation of social groups, and personal trajectories and experiences. To this end, researchers make special use of archives and self-narratives (e.g. genealogical practices) to understand how the individual constructs and affirms himself.



Biological resources and the construction of knowledge: circulation and uses

The research carried out focuses on knowledge about biological resources, on conservation and transformation techniques, and on how this knowledge is put into practice. This research addresses more specifically the relation between theoretical knowledge and practices, dealing with processes for the acquisition of knowledge, transformation techniques, exploitation and consumption. Its main challenge is to identify the cultural dissemination, the technical exchanges and the economic circulation that biological resources generate over the long term, from antiquity to the present day. Research on this topic deals with two main themes: plant resources and marine resources.



Communities and plurality: authority, violence and coexistence

This axis topic is positioned at the intersection of several dynamic fields of research on the possible diverse forms of relationship between the collective interest and the existence of diversity inherent in to any group, within a single community to which people belong or between communities - political, religious, economic, cultural, etc. In order to understand the tensions present in each collective between unity and fragmentation in human groups, researchers consider the weight of authority, cultural values, violence, and study the various modalities for the management of diversity.



Worship in the Desert at Lecques near Nimes, around 1780 (© SHPF, Paris)





LABORATOIRE DE DROIT (THEMIS-UM) - Équipe d'Accueil 4333

LAW RESEARCH CENTRE (THEMIS-UM) - Research group 4333

Themis-Um is an interdisciplinary research centre which includes researchers in private law, public law and history of law who work critically on current legal issues. Its activities have two main focuses:

- the first one is the theme "Risk, Insurance and Liability", which deals with law and risk in general and insurance law in particular, and fits in with the Institute for Risks and Insurance,
- the second one is the theme "Interbreeding and articulation of normative systems", which studies contemporary evolutions in normative standards under the influence of social changes, globalization and the comparison of rights, especially in a historical perspective.

Every year the members of Themis-UM publish numerous articles and organize around a dozen seminars or conferences on most current issues, with the purpose to develop new, critical and multidisciplinary points of view. Since 2013, Themis-Um has been working in partnership, alongside GAINS (research centre in economics) and LMM (maths laboratory), within the framework of the Risk and Insurance Institute, which aim is to mutualise the Research, Education and Innovation activities of the University in this area and to make them more visible.



33 people including

- 27 researchers and teachers-researchers
- 5 doctoral students
- 1 administrative and technical member of staff



Partnerships

University of Leeds (Great Britain), University of Santiago de Compostela (Spain), University of Maine (United States), University of Yaoundé (Cameroon), Laval University (Quebec).



Its multidisciplinary approach:

- private law
- public law
- history of law

Member of the Institute for Risk and Insurance (IRA), supported by Le Mans Université

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Sarah Cassella | Sarah.Cassella@univ-lemans.fr
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2 areas of research

Risk, insurance and liability

The aim of this theme, based on liability law, is to study and understand many questions linked with risks in general and with insurance law particularly. Constant changes in liability law, in particular connected with the emergence of new risks, lead to periodic reexamination of the main issues connected to it and especially the ever closer connections with insurance law. Going further, all types of risks are studied, and not only those covered by insurance.

"Risk law" group. "Legal treatment of uncertainty" group works within the framework of the Risk and Insurance Institute, a multidisciplinary institution which gathers economists, mathematicians and lawyers. This working group extends its research to risks of all kinds: environmental, industrial, technological, nuclear, financial, economic, systemic, food-related, medical, health, social, psychosocial, natural, professional, taxation, corporate, criminal, terrorist. Within this group, the members of Themis-Um have developed several themes:

- Financial and sovereign risks,
- Risks related to new technologies (technological changes, connected objects, predictive justice, artificial intelligence, robots, medically assisted procreation),
- Legal risks (risks of legal uncertainty and risks of litigation),
- Societal or personal risks (death, human rights, legal personality of robots, 5th risk, corruption risk, risk of personal troubles for corporates managers of companies in difficulty),
- Economic risks.

It is based on the Faculty's several Masters degrees in law.

Interbreeding and articulation of normative systems

This theme consists in focusing on contemporary transformations of normative rules: articulation of legal systems, genetics of norms, relationships between public and private law, comparative law, sociology of law. This line of research includes a comparative law research undertaken with Laval University (Québec) concerning mutual influences between the legal systems of our two countries, and targeted researches showing the transfer of normative standards according to changes in law and society (divorce without a judge, soft law unveiled).

This axis involves the participation in different projects with lawyers specialized in several domains: researchers in private and public law, historians of law, comparatists, internationalists, etc. The aim is to study the main consequences of globalization and internationalization of law, from the institutional as well as from the substantial point of view.

This theme is also based on the Faculty's different Masters degrees in law and involves both national and international projects and networks.





LABORATOIRE VIOLENCES, INNOVATIONS, POLITIQUES, SOCIALISATIONS ET SPORTS (VIPS²) - Équipe d'Accueil 4636

VIOLENCE, INNOVATIONS, POLICIES, SOCIALISATIONS AND SPORTS LABORATORY (VIPS²) - Research group 4636

Universities Rennes 2 and Le Mans, Ecole Normale Supérieure de Rennes

The VIPS² focuses on three questions around physical, sporting and artistic activities (PSAA): What are the processes involved in the penetration of PSAAs in social spaces or in resistance to them? How do PSAAs play a part in social and cultural integration? What are the levers for transformation of PSAAs and their impacts on environments? It is a question of understanding and explaining the behaviours and actions of individuals and social groups, and of suggesting recommendations for the relevant stakeholders.



45 people including

20 teacher-researchers | 4 at Le Mans
15 doctoral students | 5 at Le Mans
2 design engineers and 1 BIATSS staff member | 1 IGE at Le Mans
6 ATERs (temporary research assistants) | 2 at Le Mans
1 PAST



Partnerships

The laboratory's contractual activity is important, with public bodies (World Anti-Doping Agency, Ministry of Youth, City and Sports), local authorities, regional councils (Pays de la Loire), federations and private companies (French Cycling Federation, French Football Federation).



- Multidisciplinary: History, Sociology, Psychology, Management, Political Sciences, Legal Sciences, Sciences of Intervention.
- Partnerships with stakeholders from the world of education (academic inspection, ESPE, etc.)

Director: Michaël Attali (Rennes 2 University)
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2 areas of research

PSAAs as a vector of socialisation

Educate and integrate through PSAAs

The reference to the presumed educational role of sport has been a constant since the end of the 19th century. Given the strong social and political demands, the VIPS2 research unit has made this a central element of its work. This choice is based on research conducted in the area of integration through sport in several contexts (sporting, prison, associative, schooling, etc.) which offer promising avenues for analysis and for recommendations.

Stakeholders, violence and vulnerability

The VIPS2 looks at the influence of socio-cultural dynamics at work in and through sporting practices in order to understand the underlying mechanisms for producing violence and the consequences in terms of vulnerability. Through the study of practitioners, their representations, their physical and sporting uses and the meaning they confer on them, the VIPS2 attempts to identify and explain the influence of belief and value systems at work in sporting cultures, whether in the media or not, sometimes to the detriment of entire populations (minorities, women, children, etc.).

PSAAs as a space for political action and innovation

Political actions and ways of implementing PSAAs

The aim is to analyse the political actions for the implementation and development of PSAAs and to focus on the various decision-making arenas from which they unfold and become established.

Innovate and transform

The VIPS2 focuses on new types of practices through their creation/invention processes, then socialisation processes, their modes of capture and the distribution platforms. It addresses the changes that have occurred (or are under way), the responses provided (or to be provided), the drivers of adaptation and innovation and more generally the notion of innovation starting from "the incubator" which constitutes the sport.



Key words

- Sports
- Body
- Physical education
- PSAA
- Policies
- Socialisation
- Integration
- Education
- Innovation
- Tourism
- Cultures
- Disability
- Identities
- Violence
- Vulnerability





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