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ULISBOA ATLAS OF RESEARCH UNITS

PREFACE

The ULisboa Atlas of Research Units emphasises the remarkable progress in the scale and nature of research activities at the University of Lisbon. It creates a shared database to cast light on current trends in research topics, building up on the high premium placed on synergies that provide a fertile ground for multiple knowledge based solutions.

It captures the richness of our scientific areas that fertilize the organic units, the relevance of pursuing fundamental research towards the advancement of knowledge, and the importance of cooperation and internationalization to solve global societal problems.

The Atlas also provides valuable insights into future strategic priorities derived from national and European directives towards the adoption of open science, including open access to publications, open research data, open collaboration, citizen science, and others. We therefore need to continue to evolve in reinforcing collaborative agendas to promote economic and social activities with greater added value and to attract competitive European funds, ultimately assuring a sustainable future for all.

This institutional framework of Research Units (and Associate Laboratories) at the University of Lisbon, with statute given by the Fundação para a Ciência e a Tecnologia after a competitive call for an external, independent and international evaluation is further communicating with Research Infrastructures, Collaborative Laboratories, Technological Centres, as well as with Interdisciplinary Networks and Colleges, key drivers of innovation and national and international cooperation with academia, industry and the society at large. They establish the right connection to the business sector and the communities in which they operate, which allows them to combine fundamental research with collaborative agendas tackling major societal challenges in line with the sustainable development goals. Together they have also been instrumental to provide highly qualified employment and advanced training to future generations.

We would like to thank all of those who have contributed to build this shared database as the ULisboa Atlas of Research Units will provide an invaluable backdrop towards important debates to further develop and promote a forward-looking vision for research and innovation at the University of Lisbon.

This Atlas begins with concise infographics of the Research Unit landscape at the University of Lisbon. The 70 Research Units are then presented following grouping by the six broad scientific domains of Agricultural Sciences, Natural Sciences, Medical and Health Sciences, Engineering and Technology Sciences, Social Sciences and Humanities.

The University of Lisbon wishes that this Atlas may foster a better knowledge of the architecture of Research Units propelling them to interdisciplinary research that maximizes excellence, creativity and innovation.

Cecília Rodrigues
Vice-Rector
University of Lisboa
EXECUTIVE SUMMARY

The ULisboa Atlas of Research Units is a much-needed synthesis to know and understand the large diversity of the science system and its architecture, which reflect the commitment to research as a central part of the mission and strategy at the University of Lisbon. For the preparation of this Atlas, data was obtained from several sources: i) survey conducted in organic Units and research and development (R&D) Units at the University of Lisbon in 2021 (reference date: 31.12.2021); ii) R&D Units websites; iii) FCT webpage; and iv) FCT Portuguese Atlas of Research Units 2022. The document gives a concise description of the 70 R&D Units evaluated in 2019 by the Fundação para a Ciência e a Tecnologia (FCT) and is organised by 6 broad scientific domains, regarding description, strategic aims, activities and impact. The R&D Units at University of Lisbon represent 22% of all the units funded by FCT; 34 are rated Excellent, 28 Very Good and 8 Good. They are distributed between the 18 Schools that comprise the University of Lisbon, with Instituto Superior Técnico hosting 30% (21) of all the R&D Units, followed by Faculdade de Ciências with 20% (14). The majority of R&D Units fits in the scientific domain of Natural Sciences (33%). The University of Lisbon and its R&D Units also participate in 19 Associated Laboratories, which correspond to 48% of the national total (40), with 4 of them rated with the maximum grade. The University of Lisbon hosts 5.345 full time equivalent (FTE) researchers, which represent about 29% of the 18.523 researchers in Portugal considered by FCT. They are found mostly in Natural Sciences (1.871; 35%), followed by Engineering and Technology Sciences (1.062; 20%). The average dimension of R&D Units at University of Lisbon is of 76 researchers per unit. In 2020-2023, FCT funded the Portuguese R&D Units with about 425 M€ of direct base and programmatic funding. Of that value, about 125 M€ (29% of the national total) were attributed to the University of Lisbon. The funding awarded to each School is highly variable depending on the number of R&D Units and researchers. Instituto Superior Técnico and Faculdade de Ciências togther represent 58% of all FCT funding. Overall, it is important to emphasise that the University of Lisbon plays a central role in the Portuguese research and innovation system, where the R&D Units represent 22% of the total, and researchers and FCT funding reach about 29% of the total. Research Units at the University of Lisbon promote open science, innovation and knowledge transfer, thus contributing to internationalization and having impact in a knowledge-based society.
OVERALL CHARACTERIZATION

FCT validates the statute of each R&D Unit by organizing evaluation exercises. The evaluation system is based on periodic assessments carried out every 4-5 years by panels of international experts. The evaluation assesses the pluriannual activity reports and strategic plans, complemented with direct contacts with the researchers and the R&D Units within the scope of visits that take place to the units. As a result of this, a quality score is awarded (Excellent, Very Good and Good) to each R&D Unit, which determines the amount of multi-annual funding to be granted until a new evaluation is carried out. The last evaluation process was completed in 2019, leading to the funding of 312 R&D Units in Portugal.

RESEARCH UNITS AND FCT EVALUATION

The University of Lisbon had 70 R&D Units evaluated in 2019, which represent 22% of all the units funded by FCT in Portugal and 57% (122) in the Lisbon Metropolitan Area. Of that total, 34 were rated with Excellent, 28 with Very Good (31% and 17% of the national total, respectively) and 8 with Good (figures 1 and 3). The University of Lisbon and its R&D Units also participate in 19 Associated Laboratories (annexe 1), which corresponds to 48% of the national total (40 approved in the evaluation process of 2020), with 4 graded with the maximum rating. Following the FCT definition, an Associated Laboratories is an R&D institution or a consortium of institutions established to pursue certain national scientific and technological policy objectives. Associated Laboratories usually consist of research units or institutes from different universities.

Figura 1: FCT Evaluation (2019) of R&D Units
The distribution of the University of Lisbon R&D Units by scientific domain shows that the highest numbers are in Natural Sciences (23; 33%) and the lowest in Agricultural Sciences (3; 4%) (figure 2).

The 5,345 FTE Researchers reported as integrated in R&D Units at the University of Lisbon represent about 29% of the 18,523 researchers in Portugal considered by FCT, and 70% of those working in the Lisbon Metropolitan Area. They are found mostly in Natural Sciences (1,871; 35%), followed by Engineering and Technology Sciences (1,062; 20%). These two scientific domains together represent more than half (55%) of all the researchers at the University of Lisbon (figure 5).

The average dimension of R&D Units at the University of Lisbon is 76 researchers per unit, ranging from 54 researchers in Social Sciences to 106 researchers in Engineering and Technology Sciences domains (figure 6).

The R&D Units are spread between the 18 Schools that comprise the University of Lisbon. That distribution shows that Instituto Superior Técnico hosts 30% (21) of all units, followed by Faculdade de Ciências with 20% (14) and Faculdade de Letras with 14% (10). There are 9 Schools with only one R&D Unit (figure 4).

The distribution of the University of Lisbon R&D Units by scientific domain shows that the highest numbers are in Natural Sciences (23; 33%) and the lowest in Agricultural Sciences (3; 4%) (figure 2).

RESEARCHERS

The 5,345 FTE Researchers reported as integrated in R&D Units at the University of Lisbon represent about 29% of the 18,523 researchers in Portugal considered by FCT, and 70% of those working in the Lisbon Metropolitan Area. They are found mostly in Natural Sciences (1,871; 35%), followed by Engineering and Technology Sciences (1,062; 20%). These two scientific domains together represent more than half (55%) of all the researchers at the University of Lisbon (figure 5).

The average dimension of R&D Units at the University of Lisbon is 76 researchers per unit, ranging from 54 researchers in Social Sciences to 106 researchers in Engineering and Technology Sciences domains (figure 6).

The R&D Units are spread between the 18 Schools that comprise the University of Lisbon. That distribution shows that Instituto Superior Técnico hosts 30% (21) of all units, followed by Faculdade de Ciências with 20% (14) and Faculdade de Letras with 14% (10). There are 9 Schools with only one R&D Unit (figure 4).

The distribution of the University of Lisbon R&D Units by scientific domain shows that the highest numbers are in Natural Sciences (23; 33%) and the lowest in Agricultural Sciences (3; 4%) (figure 2).

The average dimension of R&D Units at the University of Lisbon is 76 researchers per unit, ranging from 54 researchers in Social Sciences to 106 researchers in Engineering and Technology Sciences domains (figure 6).

In the different Schools of the University of Lisbon, the number of FTE Researchers varies largely between 46 in Faculdade de Medicina Dentária and 1,749 in Instituto Superior Técnico (figure 7). The average number of researchers per School is 297.
FUNDING
In 2020-2023, FCT funded the Portuguese R&D units with about 425 M€ of direct base and programmatic funding. Of that value, about 125 M€ (29% of the national total and 73% of the Lisbon Metropolitan Area total) were assigned to ULisboa. Natural Sciences and Engineering and Technology Sciences are the two most funded scientific domains at the University of Lisbon with over 74 M€, which represents about 59% of the University of Lisbon total (figure 8).

There are significant differences in funding awarded to researchers depending on the scientific domain. The average value is 25.68 k€ in Engineering and Technology Sciences and 19.00 k€ in Humanities (figure 9). The average value granted to a researcher in R&D Units at the University of Lisbon is 23.41 k€.

Overall, the University of Lisbon plays a central role in the Portuguese research and innovation system, where FCT R&D Units represent 22%, and researchers and funding reach 29% of the respective total in Portugal (table 1).
AGRICULTURAL SCIENCES
CIISA CENTRE FOR INTERDISCIPLINARY RESEARCH IN ANIMAL HEALTH

CIISA is a member of the Associated Laboratory AL4AnimalS

EXCELLENT Evaluation (2019) 97 FTE researchers 2,31 M€ Funding FCT

DESCRIPTION
The Centre for Interdisciplinary Research in Animal Health (CIISA) is the Research Unit for Animal Science and Animal Health (FMV) of the University of Lisbon. It strives to be internationally recognized for conducting state-of-the-art research in animal and veterinary sciences. Animal Sciences and Animal Health are arguably two major research fields at the core of critical societal concerns of present times. Animal science allows the development of novel sustainable systems to secure and provide plentiful, healthy and nutritious food for an increasing population. Animal Health directly impacts public health and the global economy and, in essence, it is at the base of the research required to sustain Human Health. At a national level, CIISA provides an organization platform that leads and integrates research performed at the major Portuguese institutes and research centers acting in the Animal Sciences and Animal Health fields. Thus, CIISA contributes to develop, densify and qualify the national research system in order to promote its societal impact and the international significance of Portuguese animal and veterinary sciences. CIISA’s common research platforms have fostered creativity, talent attraction and the development of scientific careers.

STRATEGIC AIMS
CIISA’s research is in line with Europe’s increasing concern with animal health related issues that have considerable impact in the global economy and in public health and also with the general claims for the development of novel environmentally sustainable systems for animal production. CIISA’s labs are organized in two major research groups: “Animal Science and Food Safety” and “Animal Health, One Health”. Within these research groups CIISA develops internationally renowned multi-institutional and multidisciplinary research under the concepts of “Sustainable Animal Production” and “One Health”. The “Sustainable Animal Production” line relevantly includes nutritional biotechnology, quality and safety of animal products, biodiversity conservation (world-wide and native genetic resources), and animal welfare and wellbeing (in intensive and extensive production systems). The “One Health” approach mainly considers emergent infectious diseases and zoonoses, such as vector-borne diseases, translational research is located in Portugal, traditional processes.

STRATEGIC AIMS
CIISA strives to be internationally recognized (FMV) of the University of Lisbon. It

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EXCELLENT Evaluation (2019) 75 FTE researchers 1,58 M€ Funding FCT

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NEW AGRICULTURAL SCIENCES

KEYWORDS
Animal Health, One Health, Animal Science, Food Technology and Safety, Veterinary Medicine, Translational Biology, Medical Biotechnology.

NEW AGRICULTURAL SCIENCES

FOREST RESEARCH CENTRE

CEF is a member of the Associated Laboratory TERRA – Laboratory for Sustainable Land Use and Ecosystem Services.

EXCELLENT Evaluation (2019) 58 FTE researchers 1,23 M€ Funding FCT

DESCRIPTION
The Forest Research Centre (CEF) is a research unit of the School of Agriculture (ISA, Instituto Superior de Agronomia), University of Lisbon (ULisboa, Universidade de Lisboa) and a FCT – funded member of the national R&D System. The research is organized in 4 Research Groups: 1) ForEco (Forest ecology); 2) ForProtect (Protection, Restoration & Services in Forests and Agrosystems); 3) ForChange (Forest ecosystem management under global change); and 4) ForTeC (Forest products and bioeconomy). CEF develops research, post-graduate education, and outreach activities on issues dealing with forests, agro-forest systems, forest resources, forest models and simulators, forest-based industrial chains, forest-based industries.

MAJOR AREAS AND LINES OF RESEARCH

1) ForEco (Forest ecology) - Ecology and ecophysiology of forests and agroforestry, fire ecology, fire risk assessment and forest genetics; 2) ForProtect (Protection, Restoration & Services in Forests and Agrosystems) - Protection of ecosystems, ecosystem services and management of river ecosystems; 3) ForChange (Forest ecosystem management under global change) - Forest inventory methodologies based on multiple sources; forest models to deal with complex and diverse ecosystems systems in climate change scenarios; decision support methods and systems integrating a wide range of ecosystem services; and 4) ForTeC (Forest products and bioeconomies) - Product innovation and biomass valuation for the production of biofuels, added value chemicals and innovative products in the context of bioeconomies.

STRATEGIC AIMS
CEF has a multidisciplinary strategy that is implemented in 4 research groups in cooperation with other national and international research teams. It is supported by proactive grant seeking by its members and seeks a balance between basic research and applied research to solve problems of stakeholders in the forest and natural resources sector. The strategy focuses on key areas to increase the competitiveness of research and its societal impact as well as to respond to the challenges posed by the European Green Deal. Moreover, it addresses the challenge of reconciling scientific productivity with the demands of teaching and administrative management, especially for younger members. Specifically, CEF’s strategic lines involve the production of knowledge: a) in ecology and ecophysiology of forests and agroforestry, fire ecology, fire risk assessment and forest genetics; b) in maintenance and restoration of the ecological quality and natural values of ecosystems that make up the landscape; c) in sustainable management targeting ecosystem services and their valuation as well as the conservation of biodiversity; d) in production and dissemination of tools to improve multifunctional and sustainable forest management, including tools to characterize forest resources, forest models and simulators and decision support methods and systems; and e) in innovative products based on solid wood or on cork, as well as in fractionation and chemical characterization of agroforestry biomasses, in order to enhance its full valuation for the production of biofuels, added value chemicals and innovative products in the context of bioeconomies.

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NEW AGRICULTURAL SCIENCES

KEYWORDS
Forest Ecosystem Management, Landscape-Scale Fire Management, Eucalyptus Ecosystems, Agroforestry Systems, Ecosystem Services, Forest Products, Bioenergy and Bioeconomies.
**LEAF**

**LINKING LANDSCAPE, ENVIRONMENT, AGRICULTURE AND FOOD**

LEAF is a member of the Associated Laboratory TERRA – Laboratory for Sustainable Land Use and Ecosystem Services.

**DESCRIPTION**

Under a scenario of global climate change, LEAF main research goals are: 1) to design SMART landscapes; 2) to apply strategies for biodiversity conservation, anticipating shifts on critical and endangered species and habitats; 3) to improve sustainable crop productions, focusing on yield and the best management of resources, while aiming at a circular economy; and 4) to develop new processes to obtain healthy, safe, economic, and sensory appealing new and functional foods (and feeds) with impact on health.

To address these challenges, aligned with SDG and the European Green Deal, LEAF brings together a multidisciplinary team that produces knowledge with impact in multiple contexts, from temperate and Mediterranean regions to subtropical and tropical countries.

**STRATEGIC AIMS**

LEAF is composed of 3 Groups: G1) Resource Management & Landscape Architecture (Head: David Paulo Fangueiro); G2) Plant Science & Crop Production (Head: Luís Goulão); and G3) Food & Feed (Head: Anabela Raymundo). And 4 transversal Thematic Lines: LT1) Grapevine & Wine (Head: Joaquim Miguel Costa); LT2) Olive & Olive Oil (Head: Teresa Afonso do Paço); LT3) Tropical Agriculture & Food Value Chains (Head: André M. Almeida); LT4) Green & Blue Infrastructures (Head: Selma B. Penafiel). From 2020 onwards, the base funding is attributed to: i) 3-year Thematic-Line projects (4), 50k€ each, evaluated by senior LEAF members. With this approach, we aim: i) to promote collaboration between LEAF Groups; ii) to identify and reinforce LEAF’s competences and lines of research; and iii) to streamline the integration of the different groups in competitive projects of international quality. This dynamism created inter- and intra-group interactions, contributing to cohesion and to a clearer reorganization of LEAF’s research areas, increasing the level of publications and internationalization. The center’s excellence is our main challenge: to differentiate LEAF as an excellent research center, integrating all areas of research from the territory to food production, its transformation and impact on health, from a perspective of sustainability and circular economy.

**MAJOR AREAS AND LINES OF RESEARCH**

Research areas cover the entire food value chain, from farm to fork, including landscape planning and soil and water management at the basis, to the impact of food on human and animal health at the end: a) starting from the territory: sustainable, ecological and cultural planning of land use; landscape restoration; mitigation of water scarcity; innovation in soil remediation; mitigation of environmental impacts; new technologies for the treatment of effluents, sediments and organic waste; b) supporting good agricultural practices based on scientific evidence with: genetic bases and underlying molecular mechanisms; ecosystem regulation/support services, aligning resilience and sustainability with a focus on woody species; and c) progressing along the value chain, from a circular economy perspective: development of innovative foods for niches and by 3D printing; edible films with bioactives; structural lipids; oenology; fermented foods; and bioactives.

**COORDINATOR**

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**KEYWORDS**

Sustainable Agriculture; Agri-Food Value Chains; Land Use Planning; Agrobiodiversity; Circular Economy; Climate Change.
IN+ CENTER FOR INNOVATION, TECHNOLOGY AND POLICY RESEARCH

IN+ is a member of LARSyS – Laboratory of Robotics and Engineering Systems.

EXCELLENT
Evaluation (2019)
126 FTE researchers
4,04 M€ Funding FCT

DESCRIPTION
The IN+ Centre for Innovation, Technology and Policy Research is a cross-disciplinary research venue, acting since 1998 to enhance the integration of scientific research in technology, innovation and public policies, with the final goal of promoting applications for science, industry and society. IN+ aims to link basic and applied research to technology development regarding issues of sustainable innovation.

KEYWORDS
(LARSyS): Robotics and Cyber-physical Systems; Engineering Systems; Human Computer Interaction; Socio-technical Systems; Environmental Technologies

COORDINATOR
Paulo Ferreira

MAJOR AREAS AND LINES OF RESEARCH
Optimize energy processes through research on multiscale thermal phenomena, multiscale transport phenomena in energy systems and lean-combustion. Promote the development of cities, considering the complex interactions between people, technology, policy and urban infrastructures, to support decision-making in energy and waste management networks. Foster policies to increase significantly the export of engineering products and services from Portugal by deepening dynamics along the value chain of emerging industries.

CERENA CENTER FOR NATURAL RESOURCES AND ENVIRONMENT

EXCELLENT
Evaluation (2019)
63 FTE researchers
1,78 M€ Funding FCT

DESCRIPTION
CERENA’S goals are to develop research at the highest level of excellence related to the sustainable use of natural resources and other raw materials, including energy, as well as their impact on the environment. CERENA uses an approach that is simultaneously integrative, multidisciplinary and multi-scale, from the molecular level to the planetary scale. Researchers from different scientific fields - Earth, chemical and materials engineering - work together to achieve the same objectives by exploring the synergies that can arise from the combination of different knowledge areas. We are committed to finding solutions for current societal challenges, including those related to climate action, environment, health, raw materials and resource efficiency and, safe, clean and efficient energy, in order to contribute to achieving the goals of sustainable development and to progress towards a circular economy.

MAJOR AREAS AND LINES OF RESEARCH
CERENA’s goals are to develop research at the highest level of excellence related to the sustainable use of natural resources and other raw materials. CERENA’s research is oriented towards the sustainable management and efficient use of mineral resources, water, bioresources, wastes and energy, considering the life cycle of products in a circular economy framework. We are also working on projects related to climate change impacts and adaptation, and with protection of environment, health and cultural heritage, and natural hazards.

MAJOR AREAS AND LINES OF RESEARCH

Energy; Environment; Resources and raw materials; Processes and systems modelling; Circular Economy; Engineering.

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CERENA to invest in people and equipment for strength and enlarge our capabilities on key challenges that arise from the combination of different knowledge areas. We are also working on projects related to climate change impacts and adaptation, and with protection of environment, health and cultural heritage, and natural hazards. To follow up the ongoing research we need to evolve and grow in line with upcoming scientific, technological, and societal challenges such as those related to the huge amount of data (big data) that requires massive databases and sophisticated tools to extract information that will help us pursuing the sustainable development, in many diverse fields. We also strongly believe that methods for acquiring processing and extract information from imagery data will play a core role in the development of our three main fields of action. So, it is strategic for CERENA to invest in people and equipment for strength and enlarge our capabilities on imaging.
The Centre for Marine Technology and Ocean Engineering (CENTEC) is a Research Centre of IST, has been evaluated and classified by FCT as “Excellent”. CENTEC’s scientific research has been based on the activity of the Groups of Marine Environment, Marine Dynamics and Hydrodynamics, Marine Structures, Safety and Logistics of Maritime Transportation and Ports, which contribute to the Strategic Areas of Renewable Energies Offshore, Impact of Climate Change, Energy Efficiency, Subsea Engineering and the Blue Economy. CENTEC’s research team is multidisciplinary and multinational, with about half its members of foreign origin (Bangladesh, Brazil, Bulgaria, China, Egypt, India, Iran, Italy, Lebanon, Peru, Russia, Spain, Turkey, and United Kingdom). The sectors of industry that CENTEC covers are: Ship Design and Operation, Maritime Transportation and Ports, Shipbuilding and Repair, Oil and Gas, Renewable Energies Offshore, Fishing and Aquaculture, Yachts and Recreational Vessels.

**Strategic Aims**
CENTEC’s Strategy Research Plan is focused on consolidating its core areas and developing new research areas that will allow it to continue in the forefront of research in the area of Marine Technology and Ocean Engineering worldwide. The consolidation of the core research areas is done through the research lines of the existing research groups on Marine Environment, Marine Dynamics and Hydrodynamics, Marine Structures, and Safety and Logistics of Maritime Transportation and Ports that is supported by 53 PhD researchers. The plan for strategic development of new research areas is carried out through a series of thematic lines on Renewable Energies Offshore, Energy Efficiency in the design and operation of ships, Subsea Production of Oil & Gas, and the Blue Economy, involving from one to all four of the main groups. It is envisaged to give continuity to Advanced Education through research, providing training to PhD students and experience to post-doctoral researchers, in an environment of wide international research cooperation. Dissemination will also be one of the main directions through the publication of journal papers and participation in conferences as well as organizing international conferences and seminars.

**Major Areas and Lines of Research**
Marine Environment - Wave Spectral Models and Time Series Models, Probabilistic Models of Wave Parameters; Wave Modelling and Forecasting; Circulation and Oil Spill Modelling; Oceanographic Instrumentation; Marine Dynamics and Hydrodynamics – Dynamics of Moored Floaters, Nonlinear Motions and Loads; Ship Maneuvering and Control; Computational Fluid Dynamics; Full-Scale Tests and Model Tests; 3D Virtual Environments in Ship Dynamics. Marine and Offshore Structures - Ultimate Strength, Fatigue Strength, Impact Strength, Stresses in Composite Materials, Geometric Modelling of Ship Structures, Offshore and Submarine Structures; Experimental Analysis. Safety and Logistics of Maritime Transportation - Structural Safety; Reliability Based Structural Maintenance; System Reliability and Availability; Maritime Safety and Human Factors, Industrial and Occupational Safety, Logistics of Maritime Transportation and Port Operations, Economic and Technological Analysis of Maritime Clusters.

**CENTEC**
**Centre for Marine Technology and Ocean Engineering**

**EXCELLENT**
Evaluation (2019)
43 FTE researchers
1.10 M€ Funding FCT

**KEYWORDS**
Marine environment; Dynamics and Hydrodynamics; Marine structures; Safety and logistics of maritime transportation.

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**CERIS**
**Civil Engineering Research and Innovation for Sustainability**

**EXCELLENT**
Evaluation (2019)
83 FTE researchers
2.74 M€ Funding FCT

**KEYWORDS**
Hydraulics; Environment and water resources; Systems and management; Transportation systems; Structures and geotechnics; Construction.

**Description**
CERIS – Civil Engineering Research and Innovation for Sustainability – is an FCT registered research unit operating in the Civil Engineering area. It is headed by the Department of Civil Engineering, Architecture and Georesources (DECivil) of Instituto Superior Técnico (IST), University of Lisbon (ULisboa). CERIS was created in 2015 through the merge of CEBEDRO (Centre of Hydraulics, Water Resources and Environment), CESUR (Centre for Urban and Regional Systems) and ICST (Institute of Structural Engineering, Territory and Construction), 3 units from the 1970s. Their merging in CERIS enhances our comprehensive thematic coverage, in depth and scope, and promotes synergies in the inherently multidisciplinary Built and Natural Environment sector, in a more integrated manner. CERIS is a research unit of IST-ID, the Association of Instituto Superior Técnico for Research and Development. IST-ID is a private not-for-profit institution, which primarily aims to undertake scientific and technological activities, fostering knowledge transfer and promoting the involvement of nacional and foreign researchers in RI&D and projects in their areas of expertise. The mission and the objectives of CERIS address research, innovation and knowledge transfer needs in the following areas of the Built and Natural Environment sector:

- Product Development in Civil Engineering Industries;
- Risk and Safety in Built and Natural Environments;
- Rehabilitation of Built and Natural Environments; Response to Natural and Societal Changes.

**Strategic Aims**
The research objectives of CERIS are to create and disseminate scientific knowledge and to promote actors in the Built and Natural Environment sector through the active involvement in fundamental and applied research, at both national and international levels, and to enhance higher education and research training. To accomplish these objectives, CERIS is organized in research groups articulated in transversal thematic strands:

TS1: Product Development in Civil Engineering Industries;
TS2: Risk and Safety in Built and Natural Environments; Response to Natural and Societal Changes.

**Major Areas and Lines of Research**
1. Sensors, intelligent systems and knowledge-based management infrastructure systems, in what concerns improved safety, maintenance and management procedures; b. Improvement of natural treatment systems, through pilot facilities, to define best procedures when facing seasonal interruptions (lateral to determine maximum load capacity); c. Prevention, preparedness and management of risk related to natural hazards and climate change scenarios; d. Enhancement of the spatial functionality, energy efficiency and structural performance of built environments, including the improvement of seismic and fire resistance; e. Development of urban management models to establish financing systems of urban rehabilitation and public investments, and flexibility and efficiency of the infrastructure, including the definition of an integrated approach for the redesign and transformation of water bodies, namely rivers, lakes, reservoirs and aquifers, and improvement of the flexibility and efficiency of the existing water infrastructure; g. Understanding the complexity of natural and societal changes, mainly in what regards adaptation and resilience, competition and mitigation, path dependence, emergence, self-organization and metabolic mechanisms; h. Improving governance, seeking better integration of policies, new flexible planning and management, and the development of eco-efficient, high-performance and durable, environmentally friendly products, for both new construction and rehabilitation.
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EXTREME COMPUTING

The Centre for Marine Technology and Ocean Engineering (CENTEC) is a Research Centre of IST, has been evaluated and classified by FCT as "Excellent". CENTEC's scientific research has been based on the activity of the Groups of Marine Environment, Marine Dynamics and Hydrodynamics, Marine Structures, and Safety and Logistics of Maritime Transportation and Ports, which contribute to the Strategic Areas of Renewable Energies Offshore, Impact of Climate Change, Energy Efficiency, Subsea Engineering and the Blue Economy: CENTEC's research team is multidisciplinary and multinational, with about half of its members of foreign origin (Bangladesh, Brazil, Bulgaria, China, Egypt, India, Iran, Italy, Lebanon, Peru, Russia, Spain, Turkey and United Kingdom). The sectors of industry that CENTEC covers are: Ship Design and Operation, Maritime Transportation and Ports, Shipbuilding and Repair, Oil and Gas, Renewable Energies Offshore, Fishing and Aquaculture, Yachts and Recreational Vessels.

STRATEGIC AIDS

CENTEC's Strategy Research Plan is focused on consolidating its core areas and in developing new research areas that will allow it to continue in the forefront of research in the area of Marine Technology and Ocean Engineering worldwide. The consolidation of the core research areas is done through the research lines of the existing research groups on Marine Environment, Marine Dynamics and Hydrodynamics, Marine and Offshore Structures, and Safety and Logistics of Maritime Transportation and Ports that is supported by 53 PhD researchers. The plan for strategic development of new research areas is carried out through a series of thematic lines on Renewable Energies Offshore, Energy efficiency in the design and operation of ships, Subsea Production of Oil & Gas, and the Blue Economy, involving from one to all four of the main groups. It is envisaged to given continuity to Advanced Education through research, providing training to PhD students and experience to post-doctoral researchers, in an environment of wide international research cooperation. Dissemination will also be one of the main directions through the publication of journal papers and participation in conferences as well as organizing international conferences and seminars.

MAJOR AREAS AND LINES OF RESEARCH

Marine Environment - Wave Spectral Models and Time Series Models; Probabilistic Models of Wave Parameters; Wave Modelling and Hindcasting; Circulation and Oil Spill Modelling; Oceanographic Instrumentation. Marine Dynamics and Hydrodynamics - Dynamics of Moving Floters; Nonlinear Motions and Loads; Ship Maneuvering and Control. Computational Fluid Dynamics; Full-Scale Trials and Model Tests; 3D Virtual Environments in Ship Dynamics. Marine and Offshore Structures - Ultimate Strength; Fatigue Strength; Impact Strength; Structures in Composite Materials; Geometric Modelling of Ship Structures; Offshore and Submarine Structures; Experimental Analysis. Safety and Logistics of Maritime Transportation - Structural Safety, Reliability Based Structural Maintenance; System Reliability and Availability. Maritime Safety and Human Factors; Industrial and Occupational Safety; Logistics and Maritime Transportation and Port Operations; Economic and Technological Analysis of Maritime Clusters.

Lasige

LASIGE

Description

Lasige is a Research Centre of IST, has been evaluated and classified by FCT as “Excellent”. The consolidation of the core research areas is done through the activity of the Groups of Marine Environment, Marine Dynamics and Hydrodynamics, Marine Structures, and Safety and Logistics of Maritime Transportation and Ports, which contribute to the Strategic Areas of Renewable Energies Offshore, Impact of Climate Change, Energy Efficiency, Subsea Engineering and the Blue Economy. Lasige's research is multidisciplinary and multinational, with about half of its members of foreign origin (Bangladesh, Brazil, Bulgaria, China, Egypt, India, Iran, Italy, Lebanon, Peru, Russia, Spain, Turkey and United Kingdom).

Main Activities

Lasige's main activities include:

2. **Education**: Training of PhD students and post-doctoral researchers.
3. **Dissemination**: Publication of research results in scientific journals and participation in international conferences.
4. **Collaboration**: Partnerships with other research institutions and industries in Portugal and internationally.

Lasige's research is focused on the strategic areas of renewable energies offshore, impact of climate change, energy efficiency, subsea engineering and the blue economy. The research is multidisciplinary and multinational, with about half of its members of foreign origin (Bangladesh, Brazil, Bulgaria, China, Egypt, India, Iran, Italy, Lebanon, Peru, Russia, Spain, Turkey and United Kingdom).
IBB INSTITUTE FOR BIOENGINEERING AND BIO SCIENCES

IBB is a member of the Associated Laboratory i4HB - Institute for Health and Bioeconomy

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EXCELLENT
Evaluation (2019)
68 FTE researchers
1,71 M€ Funding FCT

IBB associated with the Associate Laboratory i4HB - Institute for Health and Bioeconomy

EXCELLENT
Evaluation (2019)
68 FTE researchers
1,71 M€ Funding FCT

IBB is organized in four research groups: 1) Bioengineering (IBERG) explores engineering approaches to address current technological challenges and to translate the knowledge gained in molecular and cellular mechanisms into a rational development of efficient processes and applications of biological systems; 2) Stem Cell Engineering (SCERG) is focused on cell production platforms for the ex-vivo expansion of stem cells and their controlled differentiation into specific cell types and micro-tissues. The goal is to generate large numbers of specific and high quality stem/progenitor cell subsets needed for Regenerative Medicine settings as well as to develop in vitro models for disease modelling and drug testing; 3) Biological Sciences (IBBSG) conducts multidisciplinary research in fundamental and applied biological sciences, with a focus on Microbiology, Research programs combine Molecular and Cellular Biology, Biochemistry, Functional, Comparative, and Meta-Genomics and Bioinformatics, and explore Systems and Synthetic Microbiology strategies to understand how biological systems orchestrate multiple functions; and 4) Bioprocess Engineering (IBOPT) concentrates on Molecular and Cellular Biophysics, on Fluorescence and Surface Spectroscopies, and on the Synthesis of Molecules, Polymers and Nanoparticles, having in view both fundamental science, as well as Health and Industrial Applications.

The mission of IBB is to conduct groundbreaking research that combines an understanding of the complexity and mechanisms of living systems with the application of engineering principles, to educate and train scientists and bioengineers who will contribute to foster the economic growth of biotechnology in Portugal and to transfer knowledge to society by engaging in productive relations with industrial partners, promoting the creation of start-ups and raising scientific awareness among the public. IBB key objectives are: 1. Conduct advanced (PhD) educational programmes in Bioengineering and Biosciences; 2. Address specific challenges and needs of the Human Bioengineering and Biosciences; 3. Address the economic impact of the work undertaken in the Thematic Networks at European and global level; 4. Develop strategies and applications of the R&D activities; 5. The team: appropriateness of the objectives, strategy, plan of activities and organization. IBB-SCI also renewed the Associate Laboratory status from 2021 for ten years (1 Jan 2021-31 Dez 2030).

AND THE FOLLOWING MAIN ACTIVITIES: a) Conduction of advanced research in the areas of Computer and Information Sciences, Energy, Electrical Engineering, Electronic Engineering and Informatics through projects and partnerships developed within INESC-ID; b) Participation in Networks of Excellence and Thematic Networks at European and global levels; c) Development of skills and training of human resources at the graduate level in the scientific and technological domains covered by the Scientific Areas and support the work undertaken in the Thematic Lines; d) Development and evaluation of prototypes based on research work; e) Demonstration of commercial or industrially oriented applications; f) Evaluation, comparison, standardization and quality certification of products and services; g) Support the setup and development of technology-based startup companies bringing new ideas and prototypes to the market.

MAJOR AREAS AND LINES OF RESEARCH

Thematic Lines: a) Digital transformation and citizenship; b) Life and health technology; c) Energy transition; and d) Security and Privacy. Lines of Research: a) Artificial Intelligence for people and society; b) Automated reasoning and software reliability; c) Communication networks; d) Distributed, parallel and secure systems; e) Graphics and interaction; f) Green energy and smart conversion systems; g) High-performance computing architectures and systems; h) Human language technologies; i) Information and Decision Support Systems; j) Nano-electronic circuits and systems; and k) Sustainable power systems.

INSTITUTO DE SISTEMAS E COMPUTADORES, INVESTIGAÇÃO E DESENVOLVIMENTO

STRATEGIC AIMS

The main objectives of INESC-ID are to carry out cutting-edge scientific research in the fields of Computer and Information Technologies, Electronics, Communications and Energy, to deliver advanced training of human resources and to perform the transfer of technology to the productive fabric, carried out through research and development (R&D) contracts with public or private, national or international companies and institutions, as well as to provide direct support to launching technology-based startup companies. Within this context, INESC-ID has the following main objectives: a) conduct of advanced research in the areas of Computer and Information Sciences, Energy, Electrical Engineering, Electronic Engineering and Informatics through projects and partnerships developed within its Thematic Lines; b) participation in Networks of Excellence and Thematic Networks at European and global levels; c) development of skills and training of human resources; d) the production of technological knowledge; e) provision of services and consultancy to national and international companies and institutions, as well as to provide direct support to launching technology-based startup companies; f) the reorganization of INESC, which has been classified as EXCELLENT in all FCT Evaluations for the year 2019; g) the production of technological knowledge; h) provision of services and consultancy to national and international companies and institutions, as well as to provide direct support to launching technology-based startup companies; i) provision of services and consultancy to national and international companies and institutions, as well as to provide direct support to launching technology-based startup companies; j) Nano-electronic circuits and systems; and k) Sustainable power systems.

http://www.inesc-id.pt
ISR is a member of LARSyS – Laboratory of Robotics and Engineering Systems.

LARSyS aims at conducting research and innovation activities in multidisciplinary domains with a clear societal impact. Since Jan 2015, LARSyS has new structure that results from a re-organization that took place in the framework of the national research assessment exercise. The renewed LARSyS, “Laboratory of Robotics and Engineering Systems” is a research institution that brings together the following research units: ISR-Lisbon; IN+; MARETEC; and ITI.

MAJOR AREAS AND LINES OF RESEARCH
ISR-Lisboa research is organized in 5 research groups/labs: 1) Computer and Robot Vision (VeLab); 2) Dynamical Systems and Ocean Robotics (DSOR); 3) Evolutionary Systems and Biomedical Engineering (LAcEB); 4) Intelligent Robots and Systems Group (IRSG); and 5) Signal and Image Processing Group (SIPg). Across this broad spectrum our methodologies are rooted in solid mathematical principles, providing, whenever possible, formal guarantees of performance.

STRAIGHT AIMS
ISR-Lisboa is the largest research unit in Portugal devoted to research in Robotics, Systems and Information Processing. ISR-Lisboa spans a multitude of key topics, ranging from fundamental theoretical issues to the applications of engineering methods and tools to the design and analysis of complex systems. ISR-Lisboa is organized in the following 5 research groups/labs: 1) Computer and Robot Vision (VeLab); 2) Dynamical Systems and Ocean Robotics (DSOR); 3) Evolutionary Systems and Biomedical Engineering (LAcEB); 4) Intelligent Robots and Systems Group (IRSG); and 5) Signal and Image Processing Group (SIPg). Across this broad spectrum our methodologies are rooted in solid mathematical principles, providing, whenever possible, formal guarantees of performance.

STRATEGIC AIMS
ISR-Lisboa is the largest research unit in Portugal devoted to research in Robotics, Systems and Information Processing. ISR-Lisboa is home to more than 250 researchers, students and collaborators including 52 Faculty and doctoral researchers. The internal organisation of ISR is structured in five research groups. ISR-Lisboa is part of the Associate Laboratory LARSyS/Laboratory for Robotics and Engineering Systems, together with three other partner research institutions, IN+, ITI and MARETEC.
**ITI INTERACTIVE TECHNOLOGIES INSTITUTE**

ITI is a member of LARSyS – Laboratory of Robotics and Engineering systems.

**KEYWORDS**

(LARSyS) Robotics and cyber-physical systems; Engineering Systems; Human Computer Interaction; Socio-technical Systems; Environmental technologies.

**DESCRIPTION**

ITI is a research unit dedicated to the interdisciplinary field of HCI and includes Psychology and Social Sciences, Computer Science, and Creativity and Design as core scientific areas. The cross-pollination of these areas allows thriving application areas directed towards societal needs. Assistive Technologies, Learning and Digital Culture, and Sustainability have been identified by ITI as main application areas to build capacity and advance innovation.

**STRAIGHTEN AIMS**

Investigate how nature and communities are affected by natural, political, and economic global pressures by supporting the transition to reliable, sustainable and competitive energy systems. This will lead to a climate change resilient economy and society and help to explore the opportunities related to aquatic living and marine research and bio-based industries for the blue economy: a) Invent new design techniques to best respond to, or shepherd, complex and interrelated natural, social, and cultural global issues that could help repositioning Europe in a changing world through new ideas, strategies and governance structures that integrate and improve the younger and more creative generations leveraging Europe’s cultural heritage to build a more inclusive, innovative and effective society; and b) Develop personal, business, scientific, and civic technological platforms for better understanding and informing actions, choices, and self in a global perspective - enabling the transition towards a green economy and society through eco-innovation and developing comprehensive and sustained global environmental observation and information systems.

**MAJOR AREAS AND LINES OF RESEARCH**

ITI is dedicated to the interdisciplinary field of Human-Computer Interaction and explores Psychology and Social Sciences, Computer Science, Creativity and Design.

**CONTACTS**

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**COORDINATOR**

Diurte Nuno Jardim Nunes

**EXCELLENT**

Evaluation (2019)

128

FTE researchers

4,04 M€

Funding FCT

**MARETEC MARINE, ENVIRONMENT AND TECHNOLOGY CENTRE**

MARETEC is a member of LARSyS – Laboratory of Robotics and Engineering systems.

**KEYWORDS**

(LARSyS) Robotics and cyber-physical systems; Engineering Systems; Human Computer Interaction; Socio-technical Systems; Environmental technologies.

**DESCRIPTION**

MARETEC (Marine, Environment and Technology Centre) is a Research Centre of Instituto Superior Técnico. It is dedicated to the analysis and development of solutions for environmental and sustainability problems, in a strongly interdisciplinary approach, based on fundamental physical principles and intensive use of modeling and computational tools.

**MAJOR AREAS AND LINES OF RESEARCH**

MARETEC has two main research areas: 1) Modelling of marine and land systems – MARETEC’s main activities in this area focus on numerical modelling applied to water environmental problems, monitoring and data management. MARETEC has more than 20 years of experience in the development and application of numerical models to coastal and ocean areas and 10 years of experience in land and riparian areas. It is also strongly involved with different monitoring programs for coastal areas concerning water quality and primary production. The MOHD system - a public domain code with users worldwide - is an integrated modeling system developed by MARETEC. It includes two main models: MOHID WATER and MOHID LAND; and 2) Sustainability – in this research area MARETEC aims at creating a theoretical, mathematical basis for sustainability assessment, through the integration of Thermodynamics, Ecology and Economics. For this purpose, MARETEC has notably worked on Dynamic Energy Budget theory for the metabolism of organisms; the useful energy approach to energy accounting; energy and economic growth; carbon responsibility indicators; ecosystem services; comprehensive accounting; and sustainable agriculture. Within this overarching framework MARETEC has most notably published in the areas of metabolic ecology; ecosystem services; sustainable agriculture, energy analysis, green accounting, and carbon responsibility.

**CONTACTS**

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**COORDINATOR**

Tiago Morais Delgado Domingos

**EXCELLENT**

Evaluation (2019)

128

FTE researchers

4,04 M€

Funding FCT

**ULISBOA ATLAS OF RESEARCH UNITS**

**ENGINEERING AND TECHNOLOGY SCIENCES**

**ENGINEERING AND TECHNOLOGY SCIENCES**

**ULISBOA ATLAS OF RESEARCH UNITS**
IDMEC is a member of LAETA – Associate Laboratory of Energy, Transports and Aeronautics.

**EXCELLENT**

Evaluation (2019)  281 FTE researchers  5.92 M€ Funding FCT

**KEYWORDS**

( LAETA): Mechanical Engineering; Aerospace Engineering; Transports Technology; Energy.

**DESCRIPTION**

IDMEC played a fundamental role in shaping the future of research, innovation, and education in Mechanical and Aerospace Engineering, by performing high-quality fundamental and applied research that promotes the economic development, and by contributing for the advanced training of the future generation of scientists and engineers. IDMEC has a unique capacity to address complex societal challenges, both nationally and internationally, and to promote and support the definition of public policies in its fields of activity. From 2006 to 2018, IDMEC was the leading institution that coordinated LAETA, which is an Associated Laboratory ranked as Excellent in the last evaluation performed by FCT. The core of LAETA is a dynamic, connected community of 264 Integrated Researchers (IRs) and 255 PhD students. In the last 7 years, IDMEC coordinated 26 large projects with industry (SIE MENS, GALP, REN, MOTA EN GEL, REF ER, TAP, O SMA, B RISA, CASADA MOEDA, ERSE, OM NIDEA, EWF, H I V I D H E, and other 15 National and International companies). Provided also services to public administration, such as 24 technical reports to Law Courts related to vehicle accidents. Several spin-offs and start-ups were promoted by IDMEC researchers (e.g. Stone City, Kymanor), who also participated in collaborative clusters (e.g. PPR/Cluster Railway, Produzd, MR/ Mineral Resources, AED/Aeronautics, Space and Defence). Other initiatives of science and technology management were the coordination of 38 research projects directly funded by FCT, the leadership of 6 EC projects, and the organization of 26 international scientific conferences in Lisbon with more than 4000 participants.

**STRATEGIC AIMS**

IDMEC is a leading R&D institute, within the industrial network and technological agencies. The plan for future is to increase the visibility of IDMEC to the international stakeholders. To achieve this goal, IDMEC will implement an operational strategy to outreach its activities, that includes the following procedures: 1) To strongly promote and facilitate the interaction of IDMEC researchers with existing European and International R&D networks, by creating and investing in one “acceleration program” to support an increased and award-driven participation of IDMEC in competitive calls (European Horizon, ERC, Marie Skłodowska-Curie); 2) To attract international top-level researchers to IDMEC team by investing in unprecedented and carefully selected experimental infrastructures and computational facilities. This will be achieved by applying to fund-based program PER; 3) To select top-level PhD students during their work in foreign institutions and attract them to IDMEC after their PhD completion, using the same procedure for top-level researchers. To this aim, IDMEC will additionally implement a “search program” to easily promote the identification of these candidates at international level; 4) To attract talented students from Brazil, India, Middle East and Asia, to PhD programs coordinated by IDMEC researchers and provide unique opportunities for their career development; and 5) To realign the synergies between IDMEC’s researchers and other national and international top-level researchers by promoting “anchor projects”, i.e. projects funded by IDMEC in specific frontiers-driven research within the previously mentioned fields.

**MAJOR AREAS AND LINES OF RESEARCH**

IDMEC’s dimension and critical mass allows to deploy its expertise across the main fields of sustainable energy, transport technologies and aeronautics and space, and manufacturing technologies. The scientific and technological program of IDMEC for the next five years follows the core objectives of LAETA and its four Thematic Lines (TLs), for which LAETA was awarded Excellent by FCT: TL1 – Energy, Environment and Forests, TL2 – Surface and Air Transport Vehicles, TL3 – Space Technologies, and TL4 – Resilient Industry. Among several objectives, the following three activities need to be highlighted: 1) “Marine Renewable Energy” group will play an important role in support Renewable Energy public policies and in high level education and training highly qualified and trained workforce with in-depth knowledge of the scientific, technological, economic and environmental aspects involved in the use of the different renewable energies existing at sea; 2) “Railway Technologies” group will play an important role in the Certification of Railway Vehicles. The demonstration of the suitability of a given vehicle for an infrastructure, for determined operating speeds, is what is expected from the approval of vehicles for operation on railway networks; 3) “Space Technologies” group will be in the forefront of the research in emerging areas, such as the development of nano and microsatellites, space robotics, Earth Observation missions, particularly relevant for Portugal (e.g. for maritime observations).
HUMANITIES
ARTIS
INSTITUTE OF ART HISTORY

COORDINATOR
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KEYWORDS
History of Art; Heritage; Decorative Arts; Architecture; Painting; Tiles.

DESCRIPTION
The ARTIS - Institute of Art History (ARTIS-IHA) is an R&D unit whose main scientific domain is Art History, understood as an autonomous subject, albeit open to articulation with other areas of knowledge. This field is conceived as a vast area of expertise focused on the study of artistic works and Heritage throughout history, and on the retrieval of their accumulated memories and aesthetic meanings. Through the development of basic and applied research in the domain of Art History, in articulation with other fields of knowledge directly related to its methodology and praxis - such as materials science and information technologies, among others - ARTIS-IHA covers a variety of working areas, also expressed by the diverse interests of the team’s integrated researchers and the many partners with which it collaborates.

MAJOR AREAS AND LINES OF RESEARCH
In the next five years we propose to continue to develop ARTIS identity in the scientific research context in Portugal, focusing on the subjects of Art History and Cultural Heritage, according to the 3 main axes. The question is in which direction and with which tools should ARTIS continue its path. The answer should be both technological and human. We continue to invest in Digital Art History and all its systems. Our aim is to develop working tools suited to a structured and updated research praxis, with the potential for growth in different directions.

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KEYWORDS
History of Art; Heritage; Decorative Arts; Architecture; Painting; Tiles.
CLUL
CENTER OF LINGUISTICS
OF THE UNIVERSITY OF LISBON

DESCRIPTION
The Center of Linguistics of the University of Lisbon (CLUL), a public R&D institution founded in 1932, is a unit of the School of Arts and Humanities (FLUL). CLUL is committed to leading research on Portuguese, including Portuguese-related creoles, which aims at contributing to understand language knowledge, acquisition, and use, from the mental representation of grammars to oral and written language processing, from language acquisition and development to language production across time, regions and people. The strategic areas related to CLUL's research are: grammatical and historical language variation; digital humanities and critical edition; language production across time, regions and people. The outcomes of CLUL's research on language resources and applications; spatial and historical language variation; digital humanities and critical edition; language processing at phonological, morphological, lexical, syntactic and semantic levels; language acquisition, clinical linguistics and educational linguistics; translation. These strategic areas are related to work on formal phonology, lexicons, syntax, and semantics that contributes to building an integrated model of grammar (taking into consideration how it is represented in the human mind and how it can be computationally modeled), and also to usage-based approaches to language in context.

MAJOR AREAS AND LINES OF RESEARCH
CLUL's team is organized into five research groups - Dialects and Diachrony, Grammar & Resources, Phonetics and Phonology Lab, Laboratory of Psycholinguistics, Philology - which are coherently structured to jointly contribute to the following main research areas and strands: applied research, laboratorial investigation, fieldwork, and archive and computer-based treatment of linguistic data. The center has a long tradition of producing, updating, refining and disseminating linguistic resources to the scientific community and to the general public. The outcomes of CLUL's research on language impairments have direct impact on societal challenges and target a more inclusive society. With this mission in mind, CLUL positions itself as the international reference center for the study of Portuguese and Portuguese-related languages.

STRATEGIC AIDS
CLUL's strategic research agenda involves eight key research areas strongly related to the strategic goal of furthering CLUL’s role as the leading international center for the study of Portuguese: language resources and applications for Portuguese and Portuguese-related languages; spatial and historical language variation; digital humanities and critical edition; language processing and language acquisition; language impairments in development and aging; educational linguistics; translation; formal models of grammar (and their computational modelling). This research agenda is supported by strengthening the human resources, promoting advanced training positions in articulation with FLUL’s and UL’s PhD programs, generalizing open access practices and further fostering CLUL’s international and national networks and dissemination actions inside and outside academia. CLUL sees service to the community as a central part of its research activities, and develops initiatives to broadly disseminate research outcomes, as well as to promote their application to societal demands.

UNIARQ
CENTRE FOR ARCHAEOLOGY
UNIVERSITY OF LISBON

DESCRIPTION
UNIARQ is a research unit of the School of Arts and Humanities (SAH) of the University of Lisbon (UL) dedicated to archaeological research of past human societies. The chronological scope covers the period between the first Hunter-Gatherers until the formation of the Roman province of Lusitania and the beginning of the Middle Ages. Due to the nature and the chronological scope, our research transcends the national borders and includes the Iberian, Mediterranean and Atlantic regions, even reaching a global level whenever dealing with the Neanderthal, the neolithization process, Bell beaker culture, Phoenician contacts in the Mediterranean and the Roman Empire. Research is frequently performed within multidisciplinary teams in partnership with other national and international research units, Municipalities, the National Museum of Archaeology and other museums, foundations, associations and private companies. The unit is directly involved in training undergraduate and graduate students in Archaeology at SAH-UL, for their active participation in research projects. Publications of the unit can be consulted in a reference in national and international scales and chiefly published in open access. The results of the research are the bases of Public Archaeology projects in a local and regional level, throughout the whole country and help the definition public policies of management and valorization of archaeological heritage.

MAJOR AREAS AND LINES OF RESEARCH
UNIARQ is a reference centre for the knowledge of Human Evolution; the latest hunter-gatherers and the neolithization process; the social complexity of agrarian-societal societies; the Eastern presence and its interaction with Western Iron Age communities; the origins of writing systems; the construction of the province of Lusitania and the changes that took place in Late Antiquity. The main areas of investigation include marital and family studies, archaeology of funerary and symbolic practices, paleoenvironmental and zooarchaeological studies, site and landscape analysis, DNA, cultural relations between indigenous and settlers / migrants, among others. History and Theory of Archaeology are also strategic areas. UNIARQ intends in the development of new areas of study in the area of Historical Archaeology, particularly in the Medieval / Modern periods. Archaeology of identities and Resistance linked to different geographical frameworks in Africa, Brazil and even in Europe.
CEC’s hallmark as producer of world-leading research is the work on what CEC has been calling ‘a Portuguese approach to the Classics’. This encompasses the study of the transmission of ancient texts, of how they were read, of the new genres into which they were transformed, of the authors who engaged with Classics, and of the challenging attitudes towards Classical texts, particularly in Portugal. In this area, there is still much to be done in Portugal, where many primary sources are still unavailable and are unknown even to researchers. CEC assumes the task of initiation in the production and the critical study of the huge set of still poorly known or completely unknown Latin texts from Western Iberia, and, more specifically, from the Portuguese territory. This core task is to be accompanied by research in the classical authors themselves, as they provided the models emulated and contested in the post-classical period. It must also be accompanied by innovative research in reception studies and by an investment in interdisciplinary projects. These research activities have two concrete global outputs. First, they provide the across-fields national and international academic community with new materials and perspectives that would be otherwise unavailable to them. Second, they have an impact on the non-academic community, raising awareness for the Classical cultural heritage. In order to focus on what distinguishes it from other R&D centres, and to improve its budgetary focus on research themes with greater potential for excellence, CEC prioritized, as part of its five-year planning, ten small dynamic teams which could be considered as High-Potential Research Teams (HIPRT) on the basis of their previous work, their degree of internationalization, their prospective impact and the challenges of their project. CEC has three global priorities: 1) to produce internationally excellent research; 2) to attract new researchers and students; and 3) to disseminate research.

CEC is organized in 4 thematic areas, designed to coordinate activities efficiently and to promote cohesion and communication between groups. These areas are not formal divisions, their aim is to bring together researchers interested in related topics or approaches in a cooperative, debating and free environment. 1) CLASSICA, a brings together projects dealing with Greco-Roman themes; 2) HISPANIA LATINA, it brings together projects that deal with Latin post-classical Iberica/Portuguesa; 3) ESCIC-REPTA: it brings together projects dealing with the literary reception of classical themes and texts in Portuguese-language literature; and 4) DIGALOGIC: interdisciplinary projects, exploring the ways ancient models have been used and offering inputs to other academic disciplines. CEC prioritized ten small dynamic teams, which could be considered as High-Potential Research Teams (HIPRT) on the basis of their previous work, their degree of internationalization, their prospective impact and the challenges of their project: 1) MYTHOLOGIA: ancient traditions and scholarship; 2) FLAVIA: Flavian poetry; 3) EPIGRAPHICA: Roman, Late Antique and early medieval epigraphy; 4) VISUS/CHICA: Visigothic hagiography and historiography; 5) CODIPOLE: Corpus Documentale Latium Portucalense; 6) EPISTEME: Portuguese early modern science; 7) SINICA: Portuguese and Latin texts in/on Asia; 8) HUMANISTICA: Canoés and the Portuguese Humanism; 9) ESCRITORAS: Portuguese women writers; and 10) WSCF: What stage for the Classics?

CEC’s vocation is clear – to offer a Portuguese perspective to research in Classics, focusing especially on the Classical heritage in Ibera/Portuguese. It entails a compelling task: to study the huge set of poorly known or completely unknown Latin texts from Western Iberia, and, especially from the Portuguese territory. This core task is to be accompanied by research in the classical authors themselves, as they provided the models emulated and contested in the post-classical period. It must also be accompanied by innovative research in reception studies and by an investment in interdisciplinary projects. These research activities have two concrete global outputs. First, they provide the across-fields national and international academic community with new materials and perspectives that would be otherwise unavailable to them. Second, they have an impact on the non-academic community, raising awareness for the Classical cultural heritage. In order to focus on what distinguishes it from other R&D centres, and to improve its budgetary focus on research themes with greater potential for excellence, CEC prioritized, as part of its five-year planning, ten small dynamic teams which could be considered as High-Potential Research Teams (HIPRT) on the basis of their previous work, their degree of internationalization, their prospective impact and the challenges of their project. CEC has three global priorities: 1) to produce internationally excellent research; 2) to attract new researchers and students; and 3) to disseminate research.
**CEAUL / ULICES**

**CENTRE FOR ENGLISH STUDIES**

**DESCRIPTION**

Founded in the late 1980s, CEAUL/ULICES undertakes both fundamental and applied research, often with social impact, comprehending hermeneutical practices where interpersonal/intercultural relationships are crucial. The Unit hosts researchers organised in six Research Groups (RGs) specializing in the major fields of literature, culture and linguistics, and focusing in particular on translation studies; diaspora and post-colonial studies; city studies; new media studies; digital humanities; and medical humanities.

**STRATEGIC AIMS**

CEAUL/ULICES organizes its research aiming at the dissemination of English Studies both among the Portuguese academia, and non-specialised social groups. It also aims to develop its international rapport with similar institutions abroad in order to ensure the constant updating of its activities. The Unit’s researchers are encouraged to participate in conferences and similar meetings in foreign research units, as well as to publish in specialised and peer-reviewed refereed periodicals and publishers thus presenting their work. They are also involved, on a regular basis, with other Portuguese and foreign Universities and Research Centres sharing projects and developing ground-breaking fields of study.

**MAJOR AREAS AND LINES OF RESEARCH**

The unit has six research groups (RGs) engaged in individual and collective projects. Its researchers are committed to enhancing a mono-, inter- and multidisciplinary dialogue with the aforementioned fields of knowledge. This is particularly visible in ground-breaking projects such as: SHARE – Health and Humanities Acting Together (PTDC/LLT-GUT/29231/2017), Receiving | Perceiving English Literature in the Digital Age: Messengers from the Stars. On Science Fiction and Fantasy; Creative Cultures: Cities, Trends, Strategies, Indirect Translations: Indirect Translation via English.

**COORDINATOR**

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**KEYWORDS**

English; Language; Literature; Culture; Translation.

**VERY GOOD**

Evaluation (2019)

**52**

FTE researchers

**1,00 M€**

Funding FCT

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**CH-ULISBOA**

**CENTRE FOR HISTORY OF THE UNIVERSITY OF LISBON**

**DESCRIPTION**

CH-ULisboa is an integrated research unit in the History Area of the School of Arts and Humanities of the University of Lisbon (FLUL). The unit’s main group of researchers is associated with Faculty members and graduate students linked to FLUL’s Department of History. As a research unit closely linked to FLUL’s members of the research team actively collaborate with the Faculty’s undergraduate and graduate programs. The unit also frequently welcomes foreign researchers (doctorate or not), many of them from countries outside the EU, as well as other researchers who develop their activities either through mobility programs within the framework of projects in which the Centre is a participating entity, either through the scientific institutions of their countries of origin. The restructuring program (2015-2017) led to a major renovation of the team. The research axes widened, focusing on a more global and comparative approach to history from non-European spaces and from case studies of the history of Portugal and its empire. The scientific agenda of CH-ULisboa also underwent a deep realignment, centered on the challenges social problems posed by the present (for example, in the domains of environmental history or religion and violence).

**STRATEGIC AIMS**

CH-ULisboa is an integrated research unit in the History Area of the School of Arts and Humanities of the University of Lisbon (FLUL). The unit’s main group of researchers is associated with Faculty members and graduate students linked to FLUL’s Department of History. As a research unit closely linked to FLUL’s members of the research team actively collaborate with the Faculty’s undergraduate and graduate programs. The unit also frequently welcomes foreign researchers (doctorate or not), many of them from countries outside the EU, as well as other researchers who develop their activities either through mobility programs within the framework of projects in which the Centre is a participating entity, either through the scientific institutions of their countries of origin. The restructuring program (2015-2017) led to a major renovation of the team. The research axes widened, focusing on a more global and comparative approach to history from non-European spaces and from case studies of the history of Portugal and its empire. The scientific agenda of CH-ULisboa also underwent a deep realignment, centered on the challenges social problems posed by the present (for example, in the domains of environmental history or religion and violence).

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**KEYWORDS**

Comparative and Connected History; Mobilities; Transitions; Environment; Identities; Social Memories

**EXEMPLARY**

Evaluation (2019)

**80**

FTE researchers

**1,13 M€**

Funding FCT

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DESCRIPTION
CITUA is a R&D Unit dedicated to research and advanced training in Territory, Urbanism and Architecture. Its mission is the production and dissemination of knowledge on issues with direct impact on the quality of urban life and the creation of a fairer and more equitable city. Its main aims are to document and research the theories, processes and methodologies involved in the (re) construction of urban territories and their built spaces, to study the interactions between built fabric and their potential social, economic, cultural and environmental dynamics, to evaluate models of governance, management and financing and stimulate the debate about the future. R&D activities cover different scales of urban issues, from the territory to the building structures. They are carried out in an interdisciplinary context from 7 thematic lines: Knowledge spaces, Heritage, Landscape as a Socio-Ecological System, Planning, Management and Governance, Spatial Justice and Practice-Based Research and are based on an active collaboration among researchers and strategic partnerships with other R&D centres and institutions.

STRATEGIC AIMS
CITUA adopts a strategic framework based on: a) the presence of knowledge production on urban territories according to a multiscale approach; b) active intellectual collaboration among researchers with varied backgrounds and perspectives; c) strategic partnerships with other R&D centres and institutions; d) advanced formativ e and life learning actions; e) diffusion of scientific results through publications, seminars, conferences, exchange visiting programs and national and international scientific meetings; f) new and diversified outreach activities based on the concept of open science and innovation; g) collaborative attitude among senior and junior researchers and doctoral students through the development and implementation of "research-training" sessions.

MAJOR AREAS AND LINES OF RESEARCH
CITUA’s research areas are organized around transversal and net closed challenges, covering different scales of urban issues, from the territory to the building structures. They involve researchers with distinct and complementary backgrounds whose range of skills enables a multidisciplinary approach to the issues and challenges involved in the (re)construction of urban territories and their built spaces, based on: 1. Emerging forms of inhabiting space in the contemporary urban territories resulting from evolving social demands; 2. Planning, management and governance of contemporary urban territories in scarcity, different socio-economic and climate change contexts. These two research areas also express CITUA researchers’ contribution to a growing field of cross-cultural studies and interdisciplinary scholarship that use concepts from humanistic, social, scientific and technical disciplines.

CENTRE FOR LUSOPHONIC AND EUROPEAN LITERATURES AND CULTURES

COORDINATOR
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DESCRIPTION
The Centre for Lusophone and European Literatures and Cultures (CLEPUL) was founded by the Portuguese poet António de M. Coelho in 1975. Back then CLEPUL had the broad denomination of Centre for Lusophone Literatures of the Universities of Lisbon. This Research Unit on Arts and Humanities – Literary Studies came into being with the main purpose of promoting innovative and unique research work on the universe of Literature and its cultural expressions in the countries where Camões’ language is spoken. The research work developed at CLEPUL is directly connected to the teaching and research of language, culture and literature within the School of Arts and Humanities of the University of Lisbon. It is also connected to the projects of our full members and associate members within other national and international universities and institutions. In recent years, CLEPUL has developed scientific work within its main subject matter (Portuguese Language and Literatures), considering more profound and specific strands of interest (Pioneering Works of Portuguese Literature; European Literature, the Complete Work of Father António Vieira, of Fernando de Oliveira Marques and Manoel de Pombal), the Centre devotes great interest to Lusophone historiography and literature, with critical and annotated editions, and finally, it associates the Portuguese language to the other Romance languages and, in an innovative way, with the Slav languages. Supported by national and international partnerships, CLEPUL organizes numerous congresses and conferences with the participation of several national and international researchers. Presently composed of 5 Research Groups (Portuguese Literature and Culture; Portuguese-speaking African Cultures and Literatures; Brazilian Literature and Culture; European Literatures and Cultures) and two FCT projects (Pombal and Building African Literatures) CLEPUL surveys themes of identity, violence, multiculturalism and intersections, with a strong presence in civil society and in schools through conferences and free course. In the meantime, the future is being prepared by supporting scholarship holders and postgraduates, between training courses, colloquium seminars.

MAJOR AREAS AND LINES OF RESEARCH
The Centre’s activities will follow: 1) deepening of the dialogue and exchange between Lusophone cultures and Europe, as well as between the various fields of knowledge/discourses (Arts, Letters, History and Sciences); 2) networking and internationalization achievement; 3) publication of unpublished or scarcely known sources (critical and annotated editions), complete works of founding authors of Literatures both from Portugal, Brazil, Timor and African Portuguese language countries; 4) enlargement and consolidation of CLEPUL’s formal informational networks, especially in the Lusophone and African literatures and in the frame of Br itishaisonic; 5) investment in the research scientific results’ dissemination, namely through a) systematic translation; b) the well-being of the production of scientific contents in free access, and establishing partnerships with media agents, in view of disseminating the Centre’s work; and 6) strengthening of CLEPUL’s presence outside the universities, namely in secondary schools and cultural centers, through the realization of gatherings, training actions, conferences, as a way to make known this research unit’s scientific results, aiming, in the frame of Br itishaisonic, to further foster the areas that define its true identity and boost the academic research that reinforces its natural vocation, promoting research in fields related to the intangible portuguese cultural heritage, and the current and future demands and other artistic and cultural manifestations.

KEYWORDS
Literature; Culture; Lusophony; Europe.

EXCELLENT
Evaluation (2019) 24 FTE researchers 1,09 M€ Funding FCT
CFCU
CENTRE FOR PHILOSOPHY OF SCIENCES OF THE UNIVERSITY OF LISBON

COORDINATOR
João Luís de Lemos e Silva

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DESCRIPTION
Established in 2003, the Center for Philosophy of Sciences of the University of Lisbon (CFCU) is a R&D Unit funded by the Fundação para a Ciência e a Tecnologia (Ref. UIDB/00676/2020 and UIDP/00676/2020), located in the Faculty of Sciences of the University of Lisbon. CFCU is the only research center in Portugal fully devoted to the Philosophy of Science. CFCU’s mission is to promote research, training and dissemination of knowledge in the area of Philosophy of Science in accordance with the best international scientific standards. CFCU is organized in three Research Groups (RG) and one Transversal Research Pole. The RGs are: RG1 - Philosophy of the Formal Sciences, Methodology and Epistemology; RG2 - Philosophy of Natural Sciences, RSC - Philosophy of Technology, Human Sciences, Art and Society.

STRATEGIC AIDS
CFCU aims to develop first class interdisciplinary research in Philosophy of Science, by fostering dialogue and collaboration among philosophers, scientists and artists. Accordingly, CFCU’s research strategy is based on the promotion of an international and diverse research team; support to publications in top-rated international outlets; fostering of CFCU’s members participation in national and international research projects, with an emphasis on the application for international funding; promotion of the participation in and creation of national and international research networks; support of researchers international mobility (in and outbound). Additionally, CFCU is strongly invested in postgraduate training and is increasingly committed to the dissemination of its research in both academic and lay audiences.

MAJOR AREAS AND LINES OF RESEARCH
CFCU is committed to a pluralist conception of philosophy of science, open to diverse disciplines and to crucial societal challenges. CFCU’s main areas of research correspond to its RGs, i.e., Philosophy of the Formal Sciences, Methodology and Epistemology (RG1); Philosophy of Natural Sciences (RG2); Philosophy of Technology, Human Sciences, Art and Society (RG3). The RGs are divided in research lines (RL) as follow: RG1: RL1) Epistemology & methodology, RL2) Philosophy of the formal sciences, and RL3) History & philosophy of both european and non-european scientific traditions and communication of science; RG2: RL1) Philosophy of physics, RL2) Philosophy of the life sciences, and RL3) Metaphysics of science; RG3: RL1) Science and art, RL2) Science-art-philosophy lab; RL3) Philosophy of human technology; RL4) Philosophy of human sciences, ethics and politics. Finally, the Transversal Research Pole crosses different research lines and is devoted to interdisciplinary and transdisciplinarity.

CET
CENTRE FOR THEATRE STUDIES

COORDINATOR
Rui Manuel Pina Coelho

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DESCRIPTION
The Centre for Theatre Studies (CET) was created, in 1994, by professor Osório Mateus to function as a privileged stage for scientific research activities and training researchers to study of the theatre. Historical and sociological research and the collection and fixation of materials, which allow the study not only of Portuguese theatre, but of the theatre produced and presented in Portugal, have been the privileged fields for the Centre for Theatre Studies. The work that has been developed is distinguished by privileging the exploration new technologies, in order to produce documents that allow the history of theatre in Portugal to be available quickly and accessible to a wider audience. CET considers as essential part of its mission the production and data sharing. CET follows an open-door approach to the discussion of contemporary theory and practice issues, pursues dynamic teamwork methods, and encourages the critical study of contemporary theatre production and data sharing.

MAJOR AREAS AND LINES OF RESEARCH
Three lines of research: 1) Critical Discourses in Performing Arts; 2) History of Theatre in Portugal; 3) Theatre and Image. 1) Critical Discourses in Performing Arts aims to critically address contemporary performing arts, in a national and international context. It starts with an interdisciplinary logic and a principle that aims to bring creative know-how closer to the recent perspectives of critical thinking. 2) T&I proposes as object of study the imagery materials that have marked it; the edition of the full corpus of theatre by Portuguese authors and theatrical poetics; the collection and analysis of documents that allow (re) composing the History of Theatre in Portugal, from the 13th to the 19th centuries, establishing relationships between them and making them available digitally. 3) T&I proposes as object of study the imagery materials associated with the performative activity. Both materials with particular interest in the constitution of a history of theatre by images and their interpretation are considered, as well as the presence of the image in the construction of the theatrical spectacle. It is dedicated to the analysis of the relations between theatre and image.
CFUL  
Centre of Philosophy, University of Lisbon

Very Good

Evaluation (2019)

0.95 M€  FTE researchers

Description

CFUL was founded in 1989 with the following goals: (a) to promote excellence in research by supporting the production of high-impact, internationally recognized scholarship; (b) to provide a dedicated environment for the advanced training of graduate students and early career researchers; (c) to foster interdisciplinary cooperation with other humanities and sciences; (d) to allow access to the merits of philosophy to beyond academic circles, engaging broader audiences in philosophical enquirie. In each, the research carried out in order to: (i) Promote high-standard research in Portugal; (ii) Edit and publish rigorous translations of classical philosophical works, together with original research on these works; (iii) Stimulate and support research by CFUL members through the publication of monographic studies, as well as by supporting the submission of paper to peer-reviewed journals, and the presentation of papers in international colloquia, conferences, seminars, courses, workshops or discussion panels; (iv) Connect Portuguese philosophy researchers with their international peers, by means of partnerships and for graduate students; and supports the online magazine philosophy @LISBON; and v) Provide young researchers with the opportunity to start investigation in research teams and projects under the supervision of senior researchers, thus supporting their first steps in research and improving their working conditions.

Strategic Aims

CFUL’s strategy for 2018-22, largely following the ongoing strategy, consists of three main plans: dimension, level of internationalization and overall quality of the research produced. In this way, we intend to focus our efforts on three lines of action: (i) provide CFUL members with the most favorable conditions for the development of top research; (ii) attracting talented researchers to the groups and preparing well-designed applications to fund research projects; (iii) reinforce the attention given in the advanced training of young researchers. Each research group will implement CFUL’s general lines of action according to their own objectives. Thus, IPHIL will also endeavor to create resources in Portuguese for research in the history of Philosophy. LanCog will maintain the tradition of organizing “Petrus Hispanus Lectures”, given bimannually by a leading figure in current philosophical research. The Praxis group, within the scope of the PhD in Ethics, Democracy and Social Challenges, will develop the project Ethical Challenges of Democracies. Regarding the training of young researchers, they are integrated into the research teams of ongoing projects that deal with topics related to their specific area of training, being strongly encouraged to participate in the regular seminars of CFUL. In addition, CFUL offers several scientific events designed specifically for young researchers, and supports the online magazine philosophy @LISBON, prepared by and for graduate students.

Major Areas and Lines of Research

Since its foundation, CFUL’s activities have been centered on three main lines of research: (i) research in the fundamental areas of philosophy; (ii) translation and commentary of the classic works of the western philosophical tradition; (iii) reflection on societal challenges. These lines of research are now implemented by three research groups: History of Philosophy (IPHIL); Language, Mind and Cognition (LanCog); Practical Philosophy (Praxis). Research at IPHIL will focus on classical Greco-Roman philosophy in the past century, with a special emphasis on ancient Greek and Latin philosophical works. The LanCog team will focus on the study and characterization of the terracotta sculptures from Convento dos Capuchos (Sintra) to provide data to outline the evolution of terracotta craftsmanship in Portugal. Praxis will work on values and ethics in Modern and Contemporary philosophy, focusing on the phenomenological tradition and phenomenological interpretations of ancient thought. LanCog will work in the areas: Logic and Language; Metaphysics and Epistemology; Mind and Action; Theory of Value, Normative Ethics and Philosophy of Law. Praxis will work on values in Modern thought. Political phenomena and Critical Theory; philosophical meaning of Landscape and Environment, meaning of Art and Aesthetic Experience within a philosophical framework; Social World.

VICARTE  
Glass and Ceramic for the Arts

Excellent

Evaluation (2019)

0.80 M€  FTE researchers

Description

VICARTE is a member of the Associated Laboratory for Green Chemistry (LAQV) of the Network of Chemistry and Technology (REQUIMTE).

Aesthetic Experience within a philosophical framework; Social World.

STRATEGIC AIMS

The mission of the Research Unit VICARTE is to promote excellence in the study of glass and ceramics at a local and global level. The primary goal is to develop innovative research exploring the dialogue between Art and Science.

Major Areas and Lines of Research

Glass and Ceramics; Art; Science; Cultural Heritage; Design.

STRATEGIC AIMS

The mission of the Research Unit VICARTE is to promote excellence in the study of glass and ceramics at a local and global level. The primary goal is to develop innovative research exploring the dialogue between Art and Science.
CIUHCT
INTERUNIVERSITY CENTER FOR THE HISTORY OF SCIENCE AND TECHNOLOGY

DESCRIPTION
Since its foundation in 2007, the CIUHCT has established itself as a reference unit in the history and material culture of Science, Technology and Medicine (HCTM) in Europe and the best positioned in Portugal to dialogue with researchers on the international scene, including USA. Classified as Exceptional in 2014, and Excellent in 2019, currently hosting two ERC, H2020 projects, two FCT projects and projects and two FCT exploratory projects. By bringing together the same research unit and under the same conceptual framework a set of diversified topics, the CIUHCT presents itself as a vanguard center in the area of HCTM, offering the best conditions to develop research in the areas of History of Science, Technology and Medicine. MAJOR AREAS AND LINES OF RESEARCH Instruments and Practices, Visual and Material Cultures. It addresses STM actors and practices, objects, and their representations, including but not restricted to instruments, with a view to contribute to a renewed history of knowledge, encompassing scholarly and artisanal forms, bridging traditional conceptual, socio-professional and disciplinary barriers, and contributing to recent historiographical debates. Experts, institutions and globalization. Aims at building an integrated historical narrative by focusing on the co-production of STM knowledge and its various forms of circulation and the political agendas of the various political regimes in Portugal and its colonies since the 18th century. It is particularly suited to enlighten contemporary hot topics such as innovation, knowledge and reflexive societies, through the seldom used, but extremely useful, lenses of history, philosophy and sociology of STM.

MAJOR AREAS AND LINES OF RESEARCH

Instruments and Practices, Visual and Material Cultures. It addresses STM actors and practices, objects, and their representations, including but not restricted to instruments, with a view to contribute to a renewed history of knowledge, encompassing scholarly and artisanal forms, bridging traditional conceptual, socio-professional and disciplinary barriers, and contributing to recent historiographical debates. Experts, institutions and globalization. Aims at building an integrated historical narrative by focusing on the co-production of STM knowledge and its various forms of circulation and the political agendas of the various political regimes in Portugal and its colonies since the 18th century. It is particularly suited to enlighten contemporary hot topics such as innovation, knowledge and reflexive societies, through the seldom used, but extremely useful, lenses of history, philosophy and sociology of STM.

STRATEGIC AIMS
Four main scientific goals: 1) to inscribe HSTM lenses, using history, material culture, and public culture (CIUHCT is among the few European research units to encompass these 3 dimensions) as basis for policy making, and as a showcase for European citizenship and identity building.

KEYWORDS
History of Science, Technology and Medicine; Circulation, Appropriation and Innovation; Instruments, Practices, and Material Culture; Experts, Institutions and Globalization.

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COORDINATOR
Ana Duarte Rodrigues (co-coordenadora da FCUL) e Isabel Ansal (co-coordenadora da FCT/NOVA)}
CCUL is a member of Associated Laboratory RISE - Health Research Network: From the Lab to the Community.

CCUL is a Cardiovascular Centre at the University of Lisbon (UL). CCUL is part of the Academic Medical Center of Lisbon, together with the Santa Maria University Hospital (HSM-CHLN) and the Instituto de Medicina Molecular (IMM). It provides a vibrant environment to share both new ideas and research platforms. In 2019, CCUL was evaluated by the FCT, achieving a Very Good grade. In 2021, CCUL integrated the RISE, a consortium with CINTESIS, Unit – Cardiovascular Research Unit and the CIPDIP (IPO Porto Research Center – IPO-Porto). RISE was awarded with the title of Laboratory Associated. CCUL’s main goal is to translate cardiovascular research discoveries into the development of new strategies to prevent CVD and improve patient management. Since CVD is the world’s leading cause of death, CCUL promotes scientific literacy, educating people to prevent and control CVD and conducting actions in schools.

STRATEGIC AIMS

CCUL, a biomedical research institute, is committed to advance the understanding of cardiovascular disease processes to improve health care. Translational Research, Medicine and Education are at the core of CCUL’s strategy. CCUL is having an impact on the cardiovascular field at the European level and aims to be recognized as a national reference for excellence in the cardiovascular field. To pursue its mission, it will strengthen its basic and clinical research portfolio, aiming at increasing its sustainability and scientific/socio-economic impacts, through translational projects and entrepreneurship initiatives. It plans to achieve these goals by: improving excellence in its science; ii) strengthening national collaborations, thus being more competitive in attracting national funding; iii) increasing its worldwide scientific network to internationalize science, medicine and education. Its main challenges are: i) to recruit new talent and young exclusive researchers to drive translational research and in the proposed Research Programs; ii) to continue to provide high-quality training; iii) to be more competitive in attracting national and international funding and researchers under effective collaborations; and iv) to increase and strengthen its worldwide scientific network.

MAJOR AREAS AND LINES OF RESEARCH

CCUL includes basic and clinical research in cardiovascular medicine and embraces strong Research Programs dedicated to particular disease states with a huge impact in cardiovascular system such as but not limited to: i) Heart Failure (HF), the new cardiovascular epidemics in developed countries. Reducing morbidity and mortality in HF remains the main objective; ii) Valvar Heart disease and pulmonary hypertension represent important clinical subjects; iii) Cardiac rhythm abnormalities that are extremely frequent either in association with structural heart disease or in idiopathic form; iv) Genetic Cardiomyopathies, an important cause of sudden cardiac death in the young; v) Vascular diseases involving a direct cooperation between vascular surgery and inappropriate blood from CCUL and Biomedical Engineering (IST) as well as Biomaterials and Regenerative Medicine (IS); vi) Familial Amyloid Polyneuropathy (FAP), a rare genetic disease with an important prevalence in Portugal. vii) Cardio-oncology that aims to determine pretreatment risk, as well as serial measures of cardiovascular integrity during and in the follow-up of cancer therapy and to develop new biomarkers for early cardiovascular prediction, investigating the molecular and cellular mechanisms responsible for the induction of cardiotoxicity by radiotherapy or chemotherapy, using animal models; viii) Cardiac rehabilitation, a multidisciplinary intervention involving different areas of scientific knowledge; ix) Cardiovascular Pharmacology and Therapeutics that promotes the multidisciplinary integration of knowledge to translate the research questions to patients’ benefit and welfare; and x) Cardiovascular Disease And Regeneration that aims to develop new genetic models to study cardiovascular disease and regeneration, taking advantage of zebrafish amenability for live imaging with single-cell resolution to understand the cellular mechanisms and dynamics regulating tissue development and disease, allowing to track in real-time the tissue modifications associated with each disease.

CONTACTS

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KEYWORDS

Cardiovascular diseases; Cardiovascular research; Cardiovascular disease prevention; Cardiovascular Therapeutics; Cardiovascular Diagnosis; Cardiovascular diseases; Cardiovascular research; Cardiovascular disease prevention; Cardiovascular Therapeutics; Cardiovascular Diagnosis.

DESCRIPTION

The Centro Cardiovascular da Universidade de Lisboa (CCUL) is a biomedical research institute committed to improve the understanding of cardiovascular disease (CVD) processes by following the standards of excellence in research, clinical care and medical education. As a research center of the Lisbon School of Medicine, Universidade de Lisboa (FML), CCUL integrates the Academic Medical Center of Lisbon, together with the Santa Maria University Hospital (HSM-CHLN) and the Instituto de Medicina Molecular (IMM). It provides a vibrant environment to share both new ideas and research platforms. In 2019, CCUL was evaluated by the FCT, achieving a Very Good grade. In 2021, CCUL integrated the RISE, a consortium with CINTESIS, Unit – Cardiovascular Research Unit and the CIPDIP (IPO Porto Research Center – IPO-Porto). RISE was awarded with the title of Laboratory Associated. CCUL’s main goal is to translate cardiovascular research discoveries into the development of new strategies to prevent CVD and improve patient management. Since CVD is the world’s leading cause of death, CCUL promotes scientific literacy, educating people to prevent and control CVD and conducting actions in schools.

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IMM has the status of Associated Laboratory.

**MAJOR AREAS AND LINES OF RESEARCH**

IMM’s thematic lines entail groundbreaking projects in order to increase the competitiveness of research in Portugal towards the European and international benchmarks of scientific excellence, creating scientific and medical impact beyond its borders. It further promotes the transfer of knowledge to society and international collaborations of effort to improve health research and, ultimately, the health of the citizens. Therefore, our main goal is to foster new and disruptive discoveries, creating room for bold initiatives that cannot be anticipated today within 4 thematic lines – Molecular and Cellular Biology; Development, Ageing and Cancer; Infection and Immunity; Neurosciences and Behavior - with research agendas deep aligned with the national priorities for R&D in the area of Health.

**DESCRIPTION**

Created in 2002, IMM has established itself as a leading national and internationally competing medical institute. Its strategy has been defined by promotion of excellence, leveraged by high-quality human resources, increasing expenditure in infrastructures and knowledge transfer to the society. IMM is an inclusive, equal opportunity employer offering attractive conditions and benefits. Our mission is to promote basic biomedical, clinical, translational and innovation research in these areas, with the aim of contributing to a better understanding of disease mechanisms, to develop new diagnostic or predictive tools as well as new therapies. In addition, to support postgraduate scientific training of young graduates, doctors and other health professionals and to support scientific dissemination and the provision of services abroad in the areas of specialized diagnosis, quality control and collaboration in National and International Commissions related to Health.

**STRAATEGIC AIMs**

Our overarching mission at Instituto de Medicina Molecular João Lobo Antunes (IMM) is the promotion of scientific excellence, leveraged by top quality human resources that are supported by state-of-the-art infrastructures. Building on our previous experience and success, we have defined an ambitious strategy for IMM for the coming quinquennium, laid upon three major OBJECTIVES: 1. To promote SCIENTIFIC EXCELLENCE; 2. To nurture ADVANCED TRAINING AND CAREER DEVELOPMENT; and 3. To advance TRANSLATION FOR HUMAN HEALTH. Finally, we aim to share our discoveries and enthusiasm in a range of public events and activities, thus contributing constructively to public debate about the direction, purpose and implications of biomedical research. Our vision and strategy for the future will be supported and strengthened by our novel management and governance processes. The single most important fingerprint of our institute is the HORIZONTAL ORGANIZATION: of independent research laboratories, supported by technical and administrative services, without any departmental boundaries.
**IMED.ULISBOA RESEARCH INSTITUTE FOR MEDICINES**

**DESCRIPTION**

The Research Institute for Medicines (IMED.ULisboa) is a multidisciplinary R&D Unit in Life and Health Sciences, supported by FCT and hosted at Faculty of Pharmacy. Its mission is to develop innovative medicines and benefit human health through top-class multidisciplinary research, technology and innovation. Capabilities are built around a network of 30 research groups, spanning the drug discovery and development spectrum, with an emphasis on innovative, multidisciplinary, and collaborative research. IMED.ULisboa hosts 232 researchers, 97 PhD students, and 8 technicians and administrative collaborators. In the last 5 years, 829 papers were published in SCI journals, 34 patents were produced, 92 PhD theses were concluded, and 91 projects were active. IMED.ULisboa leads one FCT PhD Programme (http://www.ff.ul.pt/phd3duul/) in collaboration with industrial partners, and participates in 5 other FCT PhD programmes. Partnering in several international networks and consortia, IMED.ULisboa promotes national productivity and competitiveness in drug discovery and development, and facilitates interactions with universities, research institutes, biotechs, pharma and general public.

**STRATEGIC AIDS**

IMED.ULisboa supports translational science, brings pharmaceutical and biomedical creativity studies and application of science for public health benefit. The methodology covers the fields of science and offers a cross-cutting, integrative view of biology, chemistry, and pharmaceutical sciences. Several groundbreaking innovations and strong technologies are now driving mechanistic breakthroughs in biology and medicinal chemistry that could theoretically make molecular searches more effective and improve drug discovery and development progress. Such methods however also raise considerable conceptual, technical and organizational challenges. IMED.ULisboa seeks to recognize robustly applied methods and innovations and to objectively examine opportunities and obstacles for their widespread use. Specifically, we focus on supporting scientific platforms that promote research indoors and outdoors, provide opportunities for sharing our findings, facilitate collaboration with academic and industry partners, and attract new talent and young students. IMED.ULisboa will continue to promote an ecosystem that nurtures and rewards creative translational science and technology research initiatives committed to enhancing human health. We aim to consolidate IMED.ULisboa as a new centre that establishes strong alliances with industrial partners and the health care sector to translate knowledge to the society.

**MAJOR AREAS AND LINES OF RESEARCH**

- Scientific Hub: We alleviate the societal burden of complex human diseases by engaging in continuous innovation that integrates chemistry, biology and pharmaceutical sciences. Multidisciplinary teams collaborate daily to develop pioneering tools and techniques to prevent, detect and treat cancer, neurodegenerative, metabolic and infectious diseases. Translational Hub: We are deeply committed to advance pharmacotherapy innovation and access to it by people living with illness by developing disruptive translational research to benefit human health, by converging our fundamental science discoveries into applied research. This is driven by the joint efforts of our institute with multiple players within the Healthcare sector.

**KEYWORDS**

- Precision therapies and technologies; Biomarkers and diagnosis; Genetics, immunology and neurosciences; Medicinal chemistry and protein engineering; Pharmaceutical technology; Pharmacology, pharmacy and regulatory science.

**COORDINATOR**

João Manuel Braz Gonçalves

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**VERY GOOD**

Evaluation (2019)

- 115 FTE researchers
- 2,15 M€ Funding FCT
BIOMEDICAL AND ORAL SCIENCES RESEARCH UNIT

FMD is a member of LIBPhys - Laboratory for Instrumentation, Biomedical Engineering and Radiation Physics.

COORDINATOR
António Mau

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KEYWORDS
LIBPhys: Radiation Physics; Biomedical Engineering; Fundamental Parameters; Analytical Methods; Instrumentation.

DESCRIPTION
FMD is a member of LIBPhys - Laboratory for Instrumentation, Biomedical Engineering and Radiation Physics.

MAJOR AREAS AND LINES OF RESEARCH
Physically, the UICOB is located in the building of the FMDUL and the laboratories are divided in 4 sections: a) Dental biomaterial's characterization and evaluation; b) Oral Biology and Biochemistry; c) Oral Microbiology, and d) Oral Hiomorphology. There are also 3 dental clinics where clinical research can be performed. Research activity spans from fundamental through purely clinical with some translational bridging projects.

STRATEGIC AIMS
In the past five years a considerable research effort development at FMDUL has been undertaken. This resulted in an increased high-quality research output expressed in impact publications. In the next 3-5 years considerable strategic efforts should be undertaken to create an integrated research environment within UICOB research unit which is clear and attractive to researchers in order to accommodate every research activity. Foster and strengthen team-based research. Establish strong network links at both national and international levels. Develop translational research with strong community impact. Increase knowledge dissemination and research visibility within researchers, population and stakeholders’ communities. Enhance research funding.

BIOSYSTEMS AND INTEGRATIVE SCIENCES INSTITUTE

COORDINATOR
Margarida Sofia Pereira Duarte Amaral

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KEYWORDS
Molecular Systems Biology; Integrative Sciences; Quantitative Biology; Bioinformatics & Computational Modelling.

DESCRIPTION
The vision of BioISI, a new institute created in 2015 (http://www.bioisi.pt) is to pursue cutting-edge research on biosystems and integrative sciences to become the leading centre at the forefront of research in this area in Portugal and internationally. BioISI’s goal is to understand and address biological questions using integrative-Systems-approaches at the vanguard of life sciences research. Is researchers benefit from a unique multidisciplinary environment that fosters creative thinking to solve problems through integrative approaches. To achieve this vision BioISI pursues 5 major missions: 1) Research in Biosystems & Integrative Sciences; 2) Technology & Instrumentation; 3) Facilities & Services; 4) Teaching & Training; and 5) Knowledge-Technology Transfer.

STRATEGIC AIMS
BioISI’s Strategic objectives: 1) Taking a lead role in Biosystems/Integrative Sciences research nationally and internationally; 2) Driving research and progress through technology development and innovation; 3) Training next generation of scientific leaders on Biosystems/Integrative Sciences; 4) Providing research facilities and services to BioISI researchers and externally; and 5) Become a major player in industry partnerships and technology transfer for life sciences. To achieve its strategic goals BioISI proposes: 1) Strengthen BioISI research, technology and innovation by hiring new researchers; 2) Reinforce scientific/technological culture on society by promoting multiple outreach events; and 3) Encourage translation of research results to society, establishing BioISI-Industry Partnership.
CENTRA CENTER FOR ASTROPHYSICS AND GRAVITATION

CENTRA, the Center for Astrophysics and Gravitation, is a research unit based at the Institute Superior Técnico and the Faculty of Science, University of Lisbon. CENTRA hosts 9 permanent faculty, 17 researchers either postdoctoral researchers or FCT investigators, and CENTRA is currently supervising 38 PhD students. CENTRA has three main scientific areas: Gravitation (GRIT), Cosmics and Stars (COSTAR) and Scientific and Space Instrumentation and Modeling (SIIM).

CENTRA’s main themes of research are black holes, gravitational waves, the big bang and the accelerating universe, inflationary cosmology, supermassive, solar physics, and stars. Researchers at CENTRA represent over 12 nationalities and 3 continents. CENTRA hosts over 50 visitors each year. CENTRA has grown to be an international leading research centre in Astrophysics and Gravitation. It hosts the only ERC grantee in theoretical physics in the country (Cardoso), 3 (out of 8) Portuguese Outstanding APS Referees (Lemos, Potting, Cardoso), 2 (out of 5) University Outstanding Researchers in Physics (Lemos, Cardoso), and this is happening, in particular we try to achieve efficient numerical algorithms; c) Mathematical Modelling in Biomedicine: development of appropriate mathematical and numerical models for large-scale computational simulations of the human cardiovascular system; and d) Statistics and Stochastic Processes: research focused on several areas of applied statistics and stochastic processes.

STRATEGIC AIMS
The strategy CENTRA follows is scientific and is related to the following projects. 1. Fundamental physics with gravitational waves. CENTRA has a recognized leader in tests of general relativity and of fundamental physics with gravitational waves. Among these issues, stand the connection with dark matter physics and tests of the nature of compact objects. 2. The Gaia mission. ground segment and gravitational waves. CENTRA is involved in the Gaia mission of ESA. Gaia is surveying one billion stars in our Galaxy and local galactic neighbourhood, in order to build a precise 3D map of the Milky Way. 3. Numerical relativity. CENTRA has a strong tradition in numerical relativity. The numerical construction of spacetimes allows to study gravitation in the strong field regime. 4. Fundamental physics and black holes. CENTRA is a partner in international networks of black holes and fundamental physics. An important issue is the understanding of black hole entropy and its connection to the Hawking radiation. 5. Stars, dark matter, and fundamental physics. CENTRA continues to test the fundamental laws of nature using stars and cosmological observations together with experimental physics data. 6. Measuring the acceleration of the Universe. CENTRA is participating on the determination of the cosmological parameters and the equation of state of the universe. 7. Next generation flagship missions. CENTRA has been actively engaged in the development of the future flagship missions METIS and LISA. CENTRA is the only Portuguese partner of METIS, i.e., Mid-Infrared E-ELT Instrument and Spectrograph which is the only first light instrument for the new Extremely Large Telescope of ESO, with a Portuguese participation. We are performing the design, manufacture and testing of the METIS warm support structure. We also participate in the METIS data analysis pipeline, science case and through guaranteed time in the observations of supermassive black holes and galactic astrophysics. CENTRA is involved in LISA, i.e., Laser Interferometer Space Antenna, an ESA mission. 8. The galactic centre and GRAVITY. CENTRA is a member of the GRAVITY consortium of ESO. GRAVITY is observing the galactic centre, also called Sagittarius A*, in particular the orbit of stars around the central supermassive black hole.

MAJOR AREAS AND LINES OF RESEARCH

The main research scientific areas at CENTRA are: 1. Physics and astrophysics of black holes and stellar objects. 2. Gravitational waves. 3. The big bang, inflationary cosmology, and the cosmic microwave background. 4. Supernovae. 5. Stellar physics and astrophysics. 6. Dark matter. 7. The Milky Way. 8. Instrumentation and astronomy.

CENTRA is a world authority in the field of black holes and fundamental physics. CENTRA is a member of the GRAVITY collaboration and is observing the galactic centre, in particular the orbit of stars around the central supermassive black hole. CENTRA is a world authority in the field of black holes and fundamental physics. CENTRA is a member of the GRAVITY collaboration and is observing the galactic centre, in particular the orbit of stars around the central supermassive black hole. CENTRA is a world authority in the field of black holes and fundamental physics. CENTRA is a member of the GRAVITY collaboration and is observing the galactic centre, in particular the orbit of stars around the central supermassive black hole.

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CEAFEL
CENTER FOR FUNCTIONAL ANALYSIS, LINEAR STRUCTURES AND APPLICATIONS

DESCRIPTION
The Center for Functional Analysis, Linear Structures and Applications, CEAFEL, is a research unit devoted to fundamental research in Mathematics. The CEAFEL main objective is developing research in Functional Analysis, Representation Theory and Matrix Theory, as well as exploring relations with other areas of Mathematics and applications to Physics and Engineering. CEAFEL aims to contribute to research mainly in the areas of Operator Theory, Operator Algebras, Harmonic Analysis, Matrix Theory, Multilinear Algebra and Representation Theory. It has a high commitment in the development, in those areas, of a significant research community. CEAFEL is a research unit integrated at Instituto Superior Técnico, IST, with a branch at Faculty of Sciences, FC, and has members from IST, FC, and also from other portuguese universities. It is organized into two groups: the Group for Functional Analysis-IST and the Group for Linear, Algebraic and Combinatorial Structures-FC. Researchers of CEAFEL maintain an active interaction with international groups and researchers working in the areas of the Center. These relationships have been developed on a regular basis with researchers in Austria, China, France, Georgia, Germany, Iran, Italy, Mexico, Spain, Russia, and USA.

STRATEGIC AIMS
CEAFEL is organized into two areas: Functional Analysis and Linear Algebraic and Combinatorial Structures. Over the last few years the Group for Functional Analysis has had the strategy of conducting research primarily in six lines: (i) Operator Algebras and Index Theory; (ii) Harmonic Analysis and Function Spaces; (iii) Riemann-Hilbert problems and Analytic Function Spaces; (iv) Convolution type Operators and Singular integral operators with shifts; (v) Application of Operator Theory to Mathematical Physics; and (vi) Applications to Numerical Analysis and Computational Algorithms. The research strategy of the Group for Linear Algebraic and Combinatorial Structures has been directed for developing research mainly in the areas of Algebras and Representation Theory, Matrix Theory, Control Theory and Linear Systems, and Multilinear Algebra. Other topics are: Calabi-Yau triangulated categories, graphs and hypergraphs, Riordan matrices, combinatorial study of polynomial, game theory and combinatorics. Each group has specific strategies although it is an objective of CEAFEL to further promote collaborations between the Groups. The strategy for the future is the consolidating of the CEAFEL as a Center at the University of Lisbon with two central components, one in Operator Theory and Operator Algebras and another in Matrix Theory and Representation of Groups. The main challenge is to achieve the CEAFEL goal of becoming and another in Matrix Theory and Representation of Groups. The main challenge is to achieve the CEAFEL goal of becoming an international reference Center in Functional Analysis, Representation Theory and Matrix Theory.

MAJOR AREAS AND LINES OF RESEARCH
The most recognized lines of investigation in CEAFEL’s activity are: (i) Variational and Sobolev spaces, grand spaces and operators of Harmonic Analysis; (ii) Non local algebras of singular integral operators, Fredholm theory of operators in those algebras; (iii) Riemann-Hilbert problems, Operator Methods in Mathematical Physics particularly in diffraction theory; (iv) Supercharacter Theories; and (v) Matrix pencil completion problems related with Control Theory. In the future is CEAFEL’s strategy to strengthen and broaden its current areas of research. Research will be carried out centrally in: (i) Operator Algebras and Index Theory, and Harmonic Analysis and Function spaces; (ii) Supercharacters and superclasses of finite linear groups in a new approach that allows the study of geometric and asymptotic properties; and (iii) Linearizations of matrix polynomials, and study of matrices over abstract rings.

COORDINATOR
Marina Amélia Duarte Reis Bastos

KEYWORDS
Algebras and Operator Theory; Algebras and Representation; Harmonic Analysis and Function Spaces; Matrices and Linear Systems.

GOOD
Evaluation (2019)
29 FTE researchers
0.32 M€ Funding FCT

EXCELLENT
Evaluation (2019)
65 FTE researchers
1.85 M€ Funding FCT

CAMGSD
CENTER FOR MATHEMATICAL ANALYSIS, GEOMETRY AND DYNAMICAL SYSTEMS

DESCRIPTION
The Centre for Mathematical Analysis, Geometry, and Dynamical Systems CAMGSD is a research and scientific training unit developing its activity in mathematics with special emphasis on the aspects of non-linear analysis, dynamical systems, geometry, and topology occurring in connection with applications to Physics, Engineering and Economics. It is a goal of the Centre to invest in the development of research and post-graduate training in these areas through post-doctoral and visiting faculty appointments, as well as fellowships and assistantships for graduate students, and the conditions for research activities of its members at high international level. The Centre’s activities include a post-doctoral training program; a visitors program; weekly seminars; workshops; tutorials and summer schools targeted at advanced PhD students and post-doctoral fellows.

STRATEGIC AIMS
It is a goal of the Centre to invest in the development of research and post-graduate training in these areas through post-doctoral and visiting faculty appointments, as well as fellowships and assistantships for graduate students, and the conditions for research activities of its members at high international level. The Centre’s activities include a post-doctoral training program; a visitors program; weekly seminars; workshops; tutorials and summer schools targeted at advanced PhD students and post-doctoral fellows.

MAJOR AREAS AND LINES OF RESEARCH
Dynamical Systems and Differential Equations. Topics: qualitative theory of dynamical systems; geometric mechanics and Hamiltonian systems; methods of nonlinear analysis; ergodic theory; stochastic analysis and related topics. Geometry and Topology. Topics: symplectic and Poisson geometry; algebraic geometry; algebraic topology; differential geometry; discrete geometry. The research also addresses applications to problems motivated from mathematical physics such as general relativity, quantum field theory, string theory and quantum topology.

COORDINATOR
Miguel Tribolet de Abreu

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KEYWORDS
Differential Equations and Dynamical Systems; Geometry and Topology.

GOOD
Evaluation (2019)
29 FTE researchers
0.32 M€ Funding FCT

EXCELLENT
Evaluation (2019)
65 FTE researchers
1.85 M€ Funding FCT

ULISBOA ATLAS OF RESEARCH UNITS
NATURAL SCIENCES
NATURAL SCIENCES
ULISBOA ATLAS OF RESEARCH UNITS
CENTER FOR MATHEMATICS, FUNDAMENTAL APPLICATIONS AND OPERATIONS RESEARCH

COORDINATOR
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KEYWORDS
Nonlinear Analysis and Differential Equations; Operations Research; Logic, Geometry and Dynamical Systems; Applied and Industrial Mathematics.

DESCRIPTION
The Center develops research in the area of Mathematical Sciences, covering domains that range from pure to applications. Its main objectives are to pursue deep studies in areas of mathematics; to train young researchers at several stages of their career; and to foster and develop applications to relevant problems in the Sciences and from Industry. Along with dissemination of scientific results, the unit promotes the communication of mathematics in schools and for the wider public.

STRATEGIC AIMS
For the next 3 years we intend to increase the number of young researchers and consolidate the current participation of our researchers, who participate in international networks. To reach these goals we intend to organize international events in Lisbon which contribute to the participation of our researchers in the international network and promote the participation in international events of high quality. CMAF|IO can also host the current seminar schemes in the area of Mathematical Analysis, Logic, Geometry and Operations Research into another level: have CMAF|IO as a strong pillar in Portugal for these areas with the regular organization of schools and scientific discussions with more than one day with an international scope. Following the current strategy, we intend to open calls for graduates and for Master’s, each year and the recruitment of one scientific researcher with a PhD degree. Research grants for students at entering level; such as research grant for students at graduate level and research grant for students at Master level. The objective of these grants is to attract and maintain the best students acquainted with research topics and to allow them to develop and increase their skills. These grants allow students to enroll in the Master’s and PhD programs in ULisboa as well as participating in research projects.

MAJOR AREAS AND LINES OF RESEARCH
The team deals with mathematical problems that currently attracting attention in several important areas such as Nonlinear Analysis, Differential Equations, Logic, Geometry and Operations Research. Moreover, some members of the unit will continue to tackle applications to real world problems. This feature and the areas involved both in a theoretical and applied research provide a characteristic of CMAF|IO which is singular among similar units. Members working in NONLINEAR ANALYSIS AND DIFFERENTIAL EQUATIONS will do research in ordinary and partial differential equations, with interest in nonlinear operator theory or the Calculus of Variations, and in several applications in Mathematical Physics and in Biomathematics. Among topics of research are specific equations, such as Navier-Stokes, Schrödinger and Koopman, together with Kepler-type problems, functional-differential equations, kinetic theory of gases, phase field models, elastoplasticity, free boundary problems, shape optimization, renormalization and signal processing. The research in the areas of LOGIC (proof theory, model theory, o-minimality), GEOMETRY (D-modules, Wilmore surfaces, Hodge structures), DYNAMICAL SYSTEMS (Lyapunov exponents of linear cocycles) will be pursued in smaller but very active subgroups. The research in OPERATIONS RESEARCH and OPTIMISATION will concern topics like integer linear programming formulations based on convex-hull reformulations of subproblems for node/arc routing and network design; efficient dual decomposition techniques based upon the relaxation of the non-anticipativity constraints to solve models for network design; an exact algorithm for bi-objective integer linear problems based on the Tardos’-shuffled metric. By their scope and reach, these contributions substantiate the profile of the Center in what concerns competences in mathematical sciences. A part of the research has a clearly applied or interdisciplinary character. It is the case of some members’ involvement in mathematical studies of Epidemiology, the interest on theoretically anchored contributions to materials science, or on Optimization in Services and Industry (e.g. health, decision support system for rescue operations, fishery surveys, forest management, disjointive programming in Chemical Engineering).

CENTER FOR THEORETICAL AND COMPUTATIONAL PHYSICS

COORDINATOR
Nuno Miguel Antunes Machado de Araújo

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KEYWORDS
Soft Condensed Matter Physics; Non-Linear Dynamics and Waves; Particle Physics.

DESCRIPTION
The Center for Theoretical and Computational Physics (CFTC) is a research unit focused on theoretical and computational physics, that leads nationally and is recognized internationally in the areas of Soft Condensed Matter and Non-linear Dynamics, with a complementary expertise on symmetry classification of dynamical and static field theories. Its research is held at a very high level, both in quantity and quality, contributing significantly to the visibility of Portugal in fundamental science and paving the way for new technologies in materials science and non-linear optics. CFTC is based at ULisboa having an excellent logistic support and a first-rate library. CFTC runs its own supercomputer with more than 1700 cores, recently upgraded with an infiniband network to run highly-efficient parallel jobs.

STRATEGIC AIMS
For the next five years, CFTC aims at maintaining a very high level of research, consolidating its international recognition and national leadership in Soft Condensed Matter and Non-linear Dynamics, as well as its position in Particle Physics. The attraction of new (IFCT) staff members and the steady increase in the number of students is an important part of our vision how to address new research challenges and of potential high-impact and extend the present network of national and international collaborators. Scientifically, we will pursue three main research streams: Collective properties, in particular dynamics of non-equilibrium and out-of-equilibrium soft matter systems; Nonlinear waves in non-Hermitian optics, quantum gases, and microcavities; and Extensions of the Standard Model. Overall, we have a research plan with very-high potential impact combined with goals of moderate risk, to balance the scientific output. With a broad in-house expertise in theoretical and computational physics, our more-ambitious goals require synergies between different team members. The unit is organized without formal groups, to promote these synergies. CFTC will also look for complementary expertise, hiring new young researchers and postdocs through a structured high level visitors program. For the period of 2018-2022, we have designed an ambitious strategy to achieve four main objectives: to increase the attraction of the best PhD students and postdocs; to consolidate the teams of staff members; to reinforce ongoing collaborations, especially those with experimental groups; and to explore more competitive funding opportunities, in particular those beyond FCT.

MAJOR AREAS AND LINES OF RESEARCH
Soft Condensed Matter Physics; Non-linear dynamics, and Particle Physics.
CENTER FOR THEORETICAL PARTICLE PHYSICS

**PARTICLE PHYSICS**

**CFTP** students at graduate level and research grant at entering level, such as research grant for recruitment of one scientific researcher with graduates and for Master's, each year and the international scope. Following the discussions with more than one day with pillar in Portugal for these areas with the another level: have CMAFcIO as a strong Geometry and Operations Research into the area of Mathematical Analysis, Logic, and Operations Research. Moreover, some members of the team will continue to tackle applications to real world problems. This team consists of theoretical and applied research provide a characteristic of CMAFIO which is singular among similar units. Members working in NONLINEAR ANALYSIS AND DIFFERENTIAL EQUATIONS will do research in ordinary and partial differential equations, with interest in nonlinear operator theory or the Calculus of Variations, and in several applications in Mathematical Physics and in Biomathematics. Among topics of research are specific equations, such as Navier-Stokes, Schrödinger and Kac-Boltzmann, together with Kato-type problems, functional-differential equations, kinetic theory of gases, phase field models, elastoplasticity, free boundary problems, shape optimisation, remanualisation and signal processing. The research in the areas of LOGIC (proof theory, model theory, o-minimality), GEOMETRY (O-modules, Wittmore surfaces, Hodge structures), DYNAMICAL SYSTEMS (Lyapunov exponents of linear cocycles) will be pursued in smaller but very active subgroups. The research in OPERATIONS RESEARCH AND OPTIMISATION will concern topics like integer linear programming formulations based on convex-hull reformulations of subproblems for node/cut routing and network design; efficient dual decomposition techniques based upon the relaxation of the non-anticipativity constraints to solve models for network design; an exact algorithm for bi-objective integer linear problems based on the Tchebychef metric. By their scope and reach, these contributions substantiate the profile of the Center in what concerns competences in mathematical sciences. A part of the research has a clearly applied or interdisciplinary character. It is the case of some members' involvement in mathematical studies of Epidemiology, the interest on theoretically anchored contributions to materials science, or on Optimization in Services and Industry (e. g. health, fire safety support system for rescue operations, fishery surveys, forest management, dejective programming in Chemical Engineering).

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**KEYWORDS**

Theoretical Particle Physics; Theoretical Nuclear Physics; Fundamental Interactions; Standard Model of Particle Physics; Physics Beyond the Standard Model.

**DESCRIPTION**

The Center develops research in the area of Mathematical Sciences, covering domains that range from foundational aspects to applications. Its main objectives are to pursue deep studies in areas of mathematics, to train young researchers at several stages of their career, and to foster and develop applications to relevant problems in the Sciences and from Industry. Along with dissemination of scientific results, the unit promotes the communication of mathematics in schools and for the wider public.

**STRATEGIC AIDS**

For the next 3 years we intend to increase the number of young researchers and consolidate the current participation of our researchers, who participate in international networks. To reach these goals we intend to organize international events in Lisbon which consolidate the participation of our researchers in the international framework and promote the participation in international events of high quality. CMAFIO can also lead the current seminars schemes in the area of Mathematical Analysis, Logic, Geometry and Operations Research into another level: have CMAFIO as a strong pillar in Portugal for these areas with the regular organization of schools and scientific discussions with more than one day with an international scope. Following the current strategy, we intend to open calls for graduates and for Master's, each year and the recruitment of one scientific researcher with a PhD degree. Research grants for students at entering level, such as research grant for students at graduate level and research grant for students at Master level. The objective of these grants is to attract and maintain the best students acquainted with research topics and to allow them to develop and increase their skills. These grants allow students to enrol in the Master’s and PhD programs in ULisboa as well as participating in research projects.

**MAJOR AREAS AND LINES OF RESEARCH**

The team deals with mathematical problems that currently attracting attention in several important areas such as Nonlinear Analysis, Differential Equations, Logic, Geometry and Operations Research. Moreover, some members of the team will continue to tackle applications to real world problems. This feature and the areas involved both in theoretical and applied research provide a characteristic of CMAFIO which is singular among similar units. Members working in NONLINEAR ANALYSIS AND DIFFERENTIAL EQUATIONS will do research in ordinary and partial differential equations, with interest in nonlinear operator theory or the Calculus of Variations, and in several applications in Mathematical Physics and in Biomathematics. Among topics of research are specific equations, such as Navier-Stokes, Schrödinger and Kac-Boltzmann, together with Kato-type problems, functional-differential equations, kinetic theory of gases, phase field models, elastoplasticity, free boundary problems, shape optimisation, remanualisation and signal processing. The research in the areas of LOGIC (proof theory, model theory, o-minimality), GEOMETRY (O-modules, Wittmore surfaces, Hodge structures), DYNAMICAL SYSTEMS (Lyapunov exponents of linear cocycles) will be pursued in smaller but very active subgroups. The research in OPERATIONS RESEARCH AND OPTIMISATION will concern topics like integer linear programming formulations based on convex-hull reformulations of subproblems for node/cut routing and network design; efficient dual decomposition techniques based upon the relaxation of the non-anticipativity constraints to solve models for network design; an exact algorithm for bi-objective integer linear problems based on the Tchebychef metric. By their scope and reach, these contributions substantiate the profile of the Center in what concerns competences in mathematical sciences. A part of the research has a clearly applied or interdisciplinary character. It is the case of some members' involvement in mathematical studies of Epidemiology, the interest on theoretically anchored contributions to materials science, or on Optimization in Services and Industry (e. g. health, fire safety support system for rescue operations, fishery surveys, forest management, dejective programming in Chemical Engineering).

CENTER OF PHYSICS AND ENGINEERING OF ADVANCED MATERIALS

**CEFEMA** is a member of the Associated Laboratory LaPMET - Laboratory of Physics for Materials and Emergent Technologies.

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**KEYWORDS**

Physics of Strong Interactions and Correlations; Condensed Matter; Nanostructured Materials and Nanotechnology; Engineering of Advanced Materials and Processes.

**DESCRIPTION**

CeFEMA research will be focus on Topological Phases of Matter, Nanostructured Fluids and Soft Matter, Non-equilibrium Matter and Processes, Energy Conversion and Storage, Advanced Materials Micro and Nanostructure, Artificial Organs, and Physics of Information and Quantum Technologies. Major advances in sustainable development require deep understanding of the underlying physical mechanisms associated to complex systems that frequently involve strong correlations between their constituent elements and the design no.

**STRATEGIC AIDS**

CeFEMA (Centre of Physics and Engineering of Advanced Materials) aims at achieving a high level of productivity leading to major advances in Condensed Matter Physics, Materials Science and Engineering. Also, a deep understanding of the underlying physical mechanisms and processes associated with the development of new materials demands for the establishment of models and the integration of experimental knowledge, ab-initio calculations, and an increasing computation power.
CEABN
CENTRE FOR APPLIED ECOLOGY "PROF. BAETA NEVES"

CEABN is a member of INBio - Research Network in Biodiversity and Evolutionary Biology, an associate laboratory.

EXCELLENT Evaluation (2019) 180 FTE researchers 4,98 M€ Funding FCT

KEYWORDS
Biodiversity; Evolutionary Biology; Conservation Biology; Landscape Ecology and Planning; Genomics; Global Change.

DESCRIPTION
The Centre for Applied Ecology “Prof. Baeta Neves” (CEABN) generates ecological knowledge and applied tools to provide stakeholders (e.g. forest producer associations, hunting associations, public administration, industry, NGOs) with the scientific bases for responding to challenges related with the sustainable use of agro-forestry resources, and the conservation of biodiversity and ecosystem services. CEABN disseminates the scientific results through knowledge transfer as environmental education and other mechanisms (e.g. book publishing, organization of thematic courses and seminars, meetings of stakeholders). The research centre holds the name of Professor Baeta Neves (1916-1992), a pioneer in the field of Nature Conservation in Portugal, and a Professor at the School of Agriculture of the Technical University of Lisbon, between the 1940s and 1980s.

STRATEGIC AIMS
The Centre for Applied Ecology “Prof. Baeta Neves” (CEABN) promotes scientific research in ecology applied to forestry and agricultural ecosystems, aiming to contribute to a sustainable management and use of the land, and the conservation of biodiversity and ecosystem services associated with agricultural and forestry uses.

MAJOR AREAS AND LINES OF RESEARCH
Biodiversity in Agricultural and Forest Ecosystems; Ecological Design and Landscape Architecture; Fire Ecology and Management; Wildlife Management; Agro-environmental Education and Dissemination of Research Results.

CE3C
CENTRE FOR ECOLOGY, EVOLUTION AND ENVIRONMENTAL CHANGES

CE3C is a member of the Associated Laboratory CHANGE – Global Change & Sustainability Institute.

EXCELLENT Evaluation (2019) 123 FTE researchers 3,01 M€ Funding FCT

KEYWORDS
Integrative Biodiversity Assessments; Evolution Under Environmental Changes; Climate and Global Changes; Mediterranean, Tropical and Island Ecology; Species and Ecosystem Management for Conservation; Science-Society Interfaces.

DESCRIPTION
eCE3c is committed to a sustainable future. Our mission is to produce fundamental and applied science in Ecology, Evolution and Environmental Changes that integrates life and climate sciences. Our research examines and integrates all levels of biological organization, from organisms up to ecosystems, both natural and anthropogenic. We will carry on our pursuit of tools to assess and monitor impacts of global change on biodiversity, health and well-being. Our combined expertise and unique databases constitute fundamental repositories of knowledge for Portugal, the Macaronesian Islands, other Portuguese-speaking countries in Africa and South America, and the European Union. eCE3c’s mission recognizes that while producing knowledge is a crucial step to sustainable development, using this knowledge to effectively promote change is just as important. Our R&D will contribute to UN’s Sustainable Development Goals. Thus, we will reduce our process to combine research with education, outreach and knowledge transfer to the public and private stakeholders.

STRATEGIC AIMS
To contribute knowledge and action aimed at future sustainability, eCE3c will annually international recognized applied and fundamental science organized around six core thematic lines (see section 3): TL1 - Integrative ecological assessment of environmental change impacts on biodiversity; TL2 - Evolutionary processes that shape biodiversity and adaptation to environmental changes; TL3 - Sustainable management strategies for high-nature-value farmlands; TL4 - Green and blue infrastructures for urban sustainability; TL5 - Human health: linking evolutionary history, environment and physiology; and TL6 - Climate services. Knowledge and expertise have been, and will continue to be during the next five years, leveraged by successfully integrating expertise between eCE3c’s 13 research groups, which published 106 inter-group collaborative papers between 2015 and 2018. Broadening international scientific collaborations is also a priority, expanding from our 41 recent and/or ongoing European projects and networks. eCE3c’s contribution to future sustainability also involves transforming knowledge into action by offering advanced training, engaging in outreach, promoting knowledge co-production and transfer to stakeholders, innovation, and policy advice. eCE3c will continue to: support the generation of independent and motivated scientists; address crucial points raised by International and European Agendas and Institutions (such as the UN’s Convention on Biological Diversity, UN’s 17 Sustainable Development Goals, and the International Union for Conservation of Nature); support and inform governmental agencies at regional and international levels; and contribute to industry and ecosystem services optimisation (e.g. microalgal driven processes for agriculture and greenhouse gas reduction). We will continue to communicate science to non-specialist audiences, contributing to citizen-science programmes, exhibitions, and other broad-audience outreach activities.

MAJOR AREAS AND LINES OF RESEARCH
Six thematic lines: TL1 - Integrated ecological assessment of environmental change on biodiversity; TL2 - Evolutionary processes that shape biodiversity and adaptation to environmental changes; TL3 - Sustainable management strategies for high-nature-value farmlands; TL4 - Green and blue infrastructures for urban sustainability; TL5 - Human health: linking evolutionary history, environment and physiology; and TL6 - Climate services.
CESAM CENTRE FOR ENVIRONMENTAL AND MARINE STUDIES

CESAM has the status of Associated Laboratory.

EXCELLENT Evaluation (2019) 214 FTE researchers 5,61 M€ Funding FCT

KEYWORDS
Climate change awareness, management & adaptation; Environmental risk management & strategic planning; Biodiversity & ecosystem based management; Environmental biology & health; Marine ecosystems & resources; Sustainability, blue growth & circular economy.

DESCRIPTION
The CESAM-Ciências is a pole of CESAM, which is currently based at the University of Aveiro. The mission of Centre for Environmental and Marine Studies (CESAM) is to develop innovative international research on environmental sciences and related risks, with emphasis on complex socio-ecological coastal systems and marine areas. The main objective of CESAM is to promote a more efficient use of terrestrial and aquatic (from catchment to the deep sea) environments, resources and a more competitive, resilient and sustainable economy, designed to enhance job creation and assure territorial and social cohesion. Furthermore, CESAM aims to develop transdisciplinary research to foster the scientific, societal and educational (graduate & postgraduate) impact of its research and innovation. CESAM focuses on the key priorities of the European 2020 strategy addressing climate action, environmental integrity, resilience and sustainability (SC5), and optimal and renewable use of biological resources and a more competitive, resilient and sustainable economy, designed to enhance job creation and assure territorial and social cohesion.

COORDINATOR
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C2TN CENTRE FOR NUCLEAR SCIENCES AND TECHNOLOGIES

C2TN is a member of the Associated Laboratory CHANGE – Global Change & Sustainability Institute.

VERY GOOD Evaluation (2019) 75 FTE researchers 1,65 M€ Funding FCT

KEYWORDS
Nuclear Sciences and Technologies, Ionizing Radiation; Radiopharmaceutical Sciences; Radiation Protection; Earth Sciences, Environment and Cultural Heritage; Advanced Materials.

DESCRIPTION
C2TN is a research centre in the areas of Radiopharmaceutical Sciences, Radiation Protection, Earth Systems, Radioactivity and Environmental processes. It gathers researchers, teachers, students and other collaborators, with knowledge and competences in leading and cutting edge, multidisciplinary and innovative topics in the aforementioned areas. The C2TN teams operate equipment, laboratories and infrastructures, some of them unique in Portugal.

COORDINATOR
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CEAUL
CENTRE OF STATISTICS AND ITS APPLICATIONS

DESCRIPTION
The Centre of Statistics and its Applications (CEAUL) was created in 1975 and represents, since then, the leading and most international research group in Probability and Statistics operating in Portugal. CEAUL’s members’ activities span interdisciplinary research across diverse areas of basic and applied sciences, including Health, Life Sciences, Forest Fires, Ecology, Quality Control, Insurance and Financial Risk, Environment and Machine Learning. CEAUL’s mission is to contribute to the resolution of concrete problems in which Statistics is necessary. In today’s world, it has a prominent place with the aim of helping to respond to societal challenges through the development, dissemination and application of statistical methodologies in the most varied areas of application.

STRATEGIC AIMS
CEAUL aims to keep pace with the recent advances in the scientific domain of Statistics to continue fundamental research on diverse aspects of Statistics. One of the sources of inspiration for the development of new statistical methodologies comes from our contribution to the wider Society by providing support to Industry, Commerce, Services and Business in the form of consultancy. In support to Industry, Commerce, Services and Business, CEAUL intends to support the expenses of international researchers to teach courses and congresses hosted by CEAUL including also the expenses related to the travel of CEAUL’s researchers to courses and congresses overseas. CEAUL also tries continuously to adapt to the demand of many more young Portuguese talents because we are confident not only that our scientific activity will go on but also that many more young Portuguese talents will join us.

MAJOR AREAS AND LINES OF RESEARCH
The topics currently developed by its members belong to the following domains: Classical and quantum integrable systems; Fractional differential equations; Numerical methods for shape optimization; Random matrix theory and physical applications; Geometric deformation, Stochastic Geometric Mechanics; Spectral geometry of differential operators, Spectral theory, Quantum geometry and Quantum gravity.

STRATEGIC AIMS
Since its beginning (in 1993), GFMLU’s adopted the strategy to create and maintain a stimulating research atmosphere in the interdisciplinary domain of Mathematical Physics. In contrast with other mathematical fields this one is, indeed, much less specialized To look for interesting problems inspired by Theoretical Physics or other scientific fields one has to be able to use, and therefore to know, multiple tools belonging to different mathematical subfields, such as (Algebra, Analysis, Geometry, Probability...), which are traditionally divided. Such profiles are not common in Portugal. This is why we always have had scientific projects (national and international) involving a number of docs and post-docs. In spite of its relatively small size, GFMLU has been able to prove, along the years, that Mathematical Physics is a serious part of Mathematics, for instance in taking to the Aula Magna the largest international Congress in the field (ICMP since 2003). And by organizing many other international conferences. The next 3 to 5 years will require a reconfiguration of GFMLU, its coordinator is going to retire and the only two present catedráticos of the center are professors at IST (after failing to be promoted at the DMF/CUL...). If FCUL is able to provide stable positions for a couple of our (excellent) researchers, GFMLU will remain a mathematical center of FCUL. This reconfiguration will be our only real challenge because we are confident not only that our scientific activity will go on but also that many more young Portuguese talents will join us.

MAJOR AREAS AND LINES OF RESEARCH
GFMLU’s domains of best international projection are presently: a) (ST) Spectral theory of operators and interplay between analytic, geometric and numerical methods. b) (SA) Stochastic Analysis and mathematics of partial differential operators. c) (IS) Classical and quantum integrable systems. d) (RM) Random matrix theory and physical applications; and e) (SP) Schrödinger’s problem and Maas Transportation. GFMLU tries continuously to adapt to the demand of the international community. In particular: (SA) will evolve towards the geometrical side, notably in the recent field of Stochastic Geometry (new entry in the last MathSciNet classification), with applications, in particular, to Hydrodynamics; (IS) gained visibility by a successful project of D. Masiero and should remain a hot topic; and (SP) results from the rediscovery by the Optimal Transport community of the starting point of the oldest research program of GFMLU, recently related to the new geometric science of information. Completely new orientations would follow...
IDL has the status of Associated Laboratory.

EXCELLENT Evaluation (2019) 112 FTE researchers 2,95 M€ Funding FCT

KEYWORDS
Climate changes; Natural Hazards & Resources; Ocean.

DESCRIPTION
Established in 1853 as the first Portuguese Meteorological and Geophysical Observatory, IDL has evolved since 2006 into an integrated Earth System Science Institute, incorporating more than 100 researchers in Atmosphere, Ocean, Solid Earth, and Environmental sciences. Based at the Faculty of Sciences at the University of Lisbon (FCUL), IDL includes researchers from 6 different Universities, two state laboratories (IPMA, the Portuguese Institute for the Sea and the Atmosphere, and IH, the Hydrographic Institute) and ARDITI (a non-profit research institution based at Madeira Island, hosting the Madeira Oceanic Observatory). IDL is an active participant in 4 infrastructures of the FCT 2020 National Research Roadmap: CAGEPOES, EMSO, WINDSCANNER and BBRI C4G. IDL is seeking to reinforce human resources, strengthening IDL’s research in these topics, and attracting more high-quality international students and researchers.

COORDINATOR
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IPFNS
INSTITUTE FOR PLASMAS AND NUCLEAR FUSION

EXCELLENT Evaluation (2019) 93 FTE researchers 3,14 M€ Funding FCT

KEYWORDS
Plasma Science and Engineering; Nuclear Fusion; Intense Lasers; Photonics; High performance computing.

DESCRIPTION
“Instituto de Física de Partículas e Ótica Nuclear” (IPFN) is a Research Unit of “Instituto Superior Técnico” (IST) with expertise on Plasma Physics, Engineering and Technologies, Controlled Nuclear Fusion, Lasers and Photonics and Advanced Computing. This unique competences and scope allow IPFN to contribute to the public policies on Energy transition and decarbonization, territorial cohesion, scientific employment, innovation society and advanced training, through the direct engagement and R&D activities of IPFN researchers and the institutional commitment of IPFN with the different stakeholders relevant at the national and the European levels. IPFN is the sole Portuguese R&D institution in the field of Plasma Science and Engineering, one of the top Physics laboratories in the country and accumulates experience of 30 years in R&D. IPFN has a broad research programme which balance activities motivated by competitive scientific problems (curiosity-driven) and a broad portfolio of technological applications (application-driven). IPFN institutional strategy has 4 main vectors: internationalization through peer recognition of competencies in several fields and participation in high-profile projects; national reach with a research node at University of Madeira and integration of researchers from several Portuguese universities; strong commitment to high level education and advanced training; and creation of reference research infrastructures. IPFN has built recognition, focused on building outstanding teams with critical mass to foster scientific and technological excellence in an international context.

COORDINATOR
Bruno Miguel Soares Gonçalves

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**IA**

**INSTITUTE OF ASTROPHYSICS AND SPACE SCIENCES**

**COORDINATOR**
Francisco Sabelli Nobrega Lobo

**DESCRIPTION**
The Instituto de Astrofísica e Ciências do Espaço (IA) is a research infrastructure with a national dimension, embodying a bold vision for the development of Astronomy, Astrophysics and Space Sciences in Portugal. IA is the largest research unit in this area in Portugal, being responsible for the majority of the national productivity in Space Sciences, one of the areas with the highest relative impact factor in Portugal. IA has a demonstrated ability to drive major astro-missions projects. It always focuses on groundbreaking fundamental research and applications, always associated with high levels of education. IA is the reference institution for this area in Portugal, being responsible for the highest output and impact in this area in Portugal, being responsible for the highest output and impact in this area in Portugal.

**STRATEGIC AIMS**
- **Astrophysics and Space Sciences** are at the forefront of scientific research, with a high level of scientific production and a strong international impact. This is one of the key areas of the institution, where Portugal has assumed international leadership roles.
- **Science Communication** is crucial for stimulating technological development and innovation. High-quality and cutting-edge research is conducted along four main research lines: 1) Towards the detection and characterization of exoplanets; 2) Towards a comprehensive study of stellar atmospheres; 3) Study of exoplanetary systems and the atmospheres of Solar System planets; 4) The study of exoplanets; and 5) Instrumentation and the formation and evolution of large-scale structures in the Universe and the evolutionary processes in galaxies.

**MAJOR AREAS AND LINES OF RESEARCH**
- IA’s activity is organized into 6 teams covering the broad spectrum of research and development in Astrophysics and Space Sciences.
- IA receives funding from various national and international agencies (e.g. ESO, ESA, NASA). It is the reference institution for this area in Portugal, being responsible for the highest output and impact in this area in Portugal. IA hosts the Doctoral Network PhD::SPACE.

**EXCELLENT**
- Evaluation (2019)
- 61 FTE researchers
- 1,98 M€ Funding FCT

**KEYWORDS**
- Astronomy and Astrophysics
- Stars and Planets
- Galaxies and Cosmology
- Astronomical Instrumentation and Space Systems
- Science Communication

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**IBEB**

**INSTITUTE OF BIOPHYSICS AND BIOMEDICAL ENGINEERING**

**COORDINATOR**
Alexandra de Rocha Pinto de Andrade

**DESCRIPTION**
IBEB’s research strategy consists in the exploration of topics with relevance for the therapy and diagnosis of diseases in the interface between Engineering, Physics and Medicine, with a strong inclination towards establishing collaborations in the medical sectors and with partners in the industry. Research is conducted along four main lines, while attempting to encourage fruitful interactions between them. Supporting teaching at the graduate and undergraduate levels is also a priority.

**STRATEGIC AIMS**
- **Biomedical Data Analysis and Processing**
- **Medical Imaging**
- **Biophysics**
- **Neurosciences**
- **Digital Health**
- **Personalised Diagnostics**
- **Biomedical Data Analysis and Processing**

**MAJOR AREAS AND LINES OF RESEARCH**
- Connectivity and brain dynamics, brain stimulation and neuro-rehabilitation, cancer therapy and drug delivery, medical imaging and diagnosis.

**VERY GOOD**
- Evaluation (2019)
- 15 FTE researchers
- 0,43 M€ Funding FCT

**KEYWORDS**
- Medical Imaging
- Biophysics
- Neurosciences
- Digital Health
- Personalised Diagnostics
- Biomedical Data Analysis and Processing
LIP has the status of Associated Laboratory.

EXCELLENT
Evaluation (2019)
Funding FCT
3,09 M€
FTE researchers

MAJOR AREAS AND LINES OF RESEARCH
LIP is committed to R&D in three main areas: Particle and astroparticle physics; instrumentation and technology development, namely for the areas of healthcare and space exploration; scientific computing and information technologies. Among the great challenges of physics for the next decades are to explore the properties of the Higgs boson, neutrinos, hadrons and nuclei, to address fundamental questions such as the origin of cosmic matter asymmetry and to search for new phenomena, including dark matter. LIP's roadmaps. LIP has direct links and to search for new phenomena, including dark matter. LIP's roadmaps. LIP has direct links and to search for new phenomena, including dark matter. LIP's roadmaps. LIP has direct links and to search for new phenomena, including dark matter. LIP's roadmaps. LIP has direct links and to search for new phenomena, including dark matter. LIP's roadmaps. LIP has direct links and to search for new phenomena, including dark matter. LIP's roadmaps. LIP has direct links and to search for new phenomena, including dark matter. LIP's roadmaps. LIP has direct links and to search for new phenomena, including dark matter. LIP's roadmaps.

STRATEGIC AIMS
The three strategic pillars of LIP are: Discovery through science, a world-class advanced education and training resulting in a new generation of scientists and professionals; and societal contributions. LIP's competences and tools to the academic and business communities.

COORDINATOR
Mário João Martins Pimenta

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LIP LABORATORY OF INSTRUMENTATION AND EXPERIMENTAL PARTICLE PHYSICS

MARE MARINE AND ENVIRONMENTAL SCIENCES CENTRE

EXCELLENT
Evaluation (2019)
Funding FCT
198
FTE researchers
4,59 M€

MAJOR AREAS AND LINES OF RESEARCH
MARE is a multipolar RD&I Centre that combines expertise allowing approaching scientifically and technologically all types of aquatic systems, from river basins and associated landscapes, to estuaries, coastal, and large marine ecosystems. Conceptually, MARE integrates four domains of action: 1. LIFE, understanding the patterns and processes influencing the distribution, functioning and evolution of biodiversity on the planet; 2. ENVIRONMENT AND RESOURCES, central on understanding environmental processes influencing the way anthropogenic pressures and impacts and natural cycles interact and the consequences for the way we explore, manage and model natural resources, ecosystems and the environment; 3. TECHNOLOGY AND INNOVATION, addressing interdisciplinary research applied to find technological and innovative angles to understand Earth and its processes, ecosystem services, and link technology transfer to industry and society; 4. INFORMATION AND SOCIETY, linking science to policy and outreach initiatives, promoting scientific and Ocean literacy and raising awareness on the most pressing issues impacting sustainable development of societies. Structurally, MARE integrates two ecosystem-oriented Research Groups (1. River Basins, 2. Coastal Systems and Ocean), and seven research Thematic Lines. The main goals of MARE Strategic Program are: 1. Advance the knowledge on the functioning of marine ecosystems, and interrelated estuarine and freshwater systems. 2. Develop scientific and technological tools towards the sustainable use of freshwater, estuaries and marine ecosystems under the framework of regional, national and international priorities; 3. Develop scientific knowledge and sound technology to help providing food and other basic and non-basic resources to society; 4. Promoting good ecological and healthy status of oceans and seas, estuaries and river basins; 5. Drive international cooperation to advanced education and training resulting in a new generation of scientists and professionals prepared for the Blue Economy; and 6. Promote Ocean literacy and contribute to a participative Blue Society.

STRATEGIC AIMS
The creation of MARE in 2015 materialised a vision on understanding and managing aquatic ecosystems based on a multipolar centre formed by several distinct RD&I groups from Universities that, in the previous decades, made significant scientific contributions to the understanding and awareness of the Ocean and Environment.

COORDINATOR
João Carlos Marques

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KEYWORDS
Ocean and Coastal Areas; River Basins; Environment; Biodiversity; Anthropogenic Impacts; Marine Resources and Biotechnology.

DESCRIPTION
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COORDINATOR
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COORDINATOR
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KEYWORDS
Ocean and Coastal Areas; River Basins; Environment; Biodiversity; Anthropogenic Impacts; Marine Resources and Biotechnology.
CQE
STRUCTURAL CHEMISTRY CENTER

CQE is a member of the Associated Laboratory IMS - Institute of Molecular Sciences.

Co-coordinator
José Nuno Canongia Lopes

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CQE is a member of the Associated Laboratory IMS - Institute of Molecular Sciences.

KEYWORDS
Chemistry; Synthesis, Catalysis and Reactivity; Materials, Soft Matter and NanoChemistry; Sustainable Chemistry, Environment, Energy; Medicinal and Biological Chemistry for Health.

DESCRIPTION
Structural Chemistry Center (CQE) is a R&D Unit of the University of Lisbon (ULisboa) with sites at Instituto Superior Técnico (IST) and Faculdade de Ciências (FCUL). It is the largest Research Unit in Chemistry of ULisboa, with more than 300 affiliated members. Research at CQE is aligned with four Thematic Lines (TLs): SYNCA (Synthesis, Catalysis and Reactivity), MATSoft (Materials, Soft Matter and NanoChemistry), SUSChem (Sustainable Chemistry for the Environment, Energy, and Manufacturing) and MEDLife (Medical and Biological Chemistry for Health). The four TLs are multidisciplinary and interdisciplinary areas that explore problems along a rational framework, initiated with the design, synthesis and characterization of new molecules and materials that can subsequently contribute to a better environment, a more sustainable energy production, or a healthier life. CQE also comprises eleven research groups that reflect the scientific interests of their members, their capacity to share resources and their wish to be managed by a common structure. The organization of CQE around eleven research groups and four TLs is an integrated and flexible concept: i) groups are encouraged to produce scientific work and contribute within the context of different TLs; ii) thematic lines are not compartmentalized: instead, they overlap in multiple research areas; iii) inter-group collaboration is expected to solve specific challenges posed by a given TL from different perspectives. CQE contributed to: International recognition in arctic research activities related to climate change; Nucleoside-based compounds for agricultural chemistry and health; Sustainable energy solutions: “Fit for Purpose” electrochemical and photovoltaic devices; Eco-friendly processes: from one-pot homogeneous catalysis to new heterogeneous catalysts; Organic and metal-based drugs for cancer, tuberculosis, diabetes and Alzheimer therapies.

STRATEGIC AIMS
Structural Chemistry Center is defined by its threefold mission: i) the integrated development and use of chemistry-based knowledge to investigate challenging societal problems; ii) the promotion of advanced training in chemistry-related areas; and iii) the transfer of scientific and technological knowledge in terms of its social, economic and cultural impact.

EXCELLENT
Evaluation (2019)
179
FTE researchers
4,20 M€
Funding FCT

ULISBOA ATLAS OF RESEARCH UNITS
NATURAL SCIENCES
SOCIAL SCIENCES
### ADVANCE, RESEARCH CENTER IN MANAGEMENT

**Description**

ADVANCE is a research centre in management based at ISEG – Lisbon School of Economics and Management – that conducts top research activities, combining a deep theoretical background with extensive empirical research. ADVANCE researchers produce work that is presented at top international conferences, alongside with highly cited papers published in top quality scientific journals and several books and reports. The researchers are mainly professors from ISEG’s department of management and are among the best academics in the world, having received various international awards for research achievements and knowledge dissemination. They serve in numerous editorial boards of top peer reviewed journals, several international conferences scientific committees, national and international scientific accreditation boards, etc. They have funded national and international funded projects, supported by the very competent and dedicated ADVANCE staff. ADVANCE regularly promotes international conferences, summer schools and research seminars, allowing the interaction of its members with top researchers in the several fields of management. ADVANCE hosts ISEG’s PhD program in Management – the single doctoral program in management from the Universidade de Lisboa. ISEG is a member of AACSB, Universidade de Lisboa, the major university in Portugal and a leading institution of higher education in Europe.

**Strategic Aims**

ADVANCE’s strategy is to reach and maintain national and international accreditations for ISEG’s management department programs by obtaining funding for research projects, with the scientific freedom of all researchers.

**Major Areas and Lines of Research**

- Finance and Accounting
- Strategy and Marketing
- Information Systems and Production and Operations Management
- Human Resource Management and Organizational Behavior

**Coordinator**

Vítor Fernando da Conceição Gonçalves

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**Key Words**

Economic Sociology; Organizations and Business; Economic History; Development Studies; Sustainability Science; Socioeconomics.

**Very Good**

Evaluation (2019)

120 FTE researchers

2,19 M€ Funding FCT

### CAPP CENTER FOR ADMINISTRATION AND PUBLIC POLICIES

**Description**

The Centre for Public Administration and Public Policies (CAPP) is the leading research centre on public policies of the University of Lisbon, the largest university in Portugal. CAPP was founded in 2001 to advance knowledge and support decision making regarding the design, implementation, analysis and evaluation of public policies. Its applied research has a focus on improving the quality in governance, with the following strategic aims: 1) The production of scientific knowledge in the areas of Public Administration, Government and Social Sciences, marked by Science for Public Policies; 2) To contribute to the training of researchers on processes and tools for the design, implementation and evaluation of public policies; and 3) To foster collaboration in national and international networks for the production and sharing of knowledge in the fields of administration and public policies, events, establish robust connections between researchers and master and doctoral students, invest in the training of researchers, support the dissemination of results in the scientific field.

**Major Areas and Lines of Research**

- Public Policies; Public Administration; Governance; Organizational Behaviour; Sustainable Communities; Lusophony / Lusosphere.

**Coordinator**

Luís Miguel Pereira Lopes

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**Key Words**

Communities; Lusophony / Lusosphere.

**Excellent**

Evaluation (2019)

87 FTE researchers

1,45 M€ Funding FCT
The Centre of Geographical Studies (CEG) is a research and development unit of the Institute of Geography and Spatial Planning (IGOT) at the University of Lisbon (ULisboa), endowed with statutory, administrative and scientific autonomy. CEG is the main reference in research and dissemination of geographical knowledge, and contributes to societal and regional development, spatial planning, sustainable use of environmental resources and spatial justice. CEG has taken on the following responsibilities: 1) Conduct research of fundamental and applied nature; 2) Promote and publish scientific and didactic studies; 3) Organise courses and scientific meetings; 4) Promote exchanges with national and foreign partner institutions; 5) Compile and make available bibliographic, cartographic and multimedia information, relevant to Geography and Spatial Planning, within the scope of the IGOT and ULisboa; and 6) Support the training of new researchers.

**MAJOR AREAS AND LINES OF RESEARCH**

Centre for Geographical Studies’s (CEG) strategic objectives for 2018-2022 are structured around 4 main thematic agendas: i) Environmental Changes, Resources and Natural Risks; ii) Urban Challenges, Socioeconomic Changes and Spatial Justice; iii) Territories, Governance, Policies and Planning; and iv) Environment, Culture, Society and Place. In order to fulfill these objectives, the CEG is structured in 6 research groups: 1) The MIGRARE group (Migrations, Spaces and Societies), which divides its activity into several thematic areas, such as: migration and demographic dynamics in Europe, as well as processes of urban transformation; 2) the ZOE Group (Urban and Regional Dynamics and Policies), 3) the ZEPHYRUS Group (Climate Change and Environmental Systems) focuses on climate change and its impacts on environmental and human systems, at different geographical and temporal scales, with research focusing on three fundamental areas: Climatology; Biogeography and Ecology; Antonio Lopes coordinates the group; 4) the ZOE Group (Urban and Regional Dynamics and Policies) has three main themes of interest in the field of Geography: urban and regional dynamics with their specific contexts in relation to global trends; strategies and policies for urban and regional development; and, lastly, the debate on geographic thinking, cartography and geology in Portugal. Héctorino Cachinho Jorge Matheus are the coordinators of the group.

**STRATEGIC AIMS**

- The CEG 7 objectives for 2018-22: 1) Developing high-quality research to understand environmental, social and territorial dynamics; 2) Nurturing and developing international partnerships and advanced training networks; 3) Strengthening postgraduate training through the increase of the number of PhD grants in the certified PhD programmes offered by IGOT; 4) Seeking and securing the funding base and diversifying funding sources to respond to the severe crisis and Troika intervention; 5) Investing in facilities, research infrastructure and staff training to offer good working conditions and services to support high-quality research; 6) Increasing research societal impact and inform public policies for an inclusive and sustainable development of cities and regions; 7) Delivering a sound ‘open science’ policy aiming at solving problems in a collaborative and transparent way; and 7) Streamline the dissemination and communication of science in society, contributing to the greater visibility of CEG and the social recognition of geographic knowledge.

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CEGIS-T
CENTRE FOR MANAGEMENT STUDIES OF INSTITUTO SUPERIOR TÉCNICO

COORDINATOR
José Rui De Matos Figueira

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KEYWORDS
Operations and Supply Chain Management; Decision and Risk Analysis; Environmental and Sustainability Assessment; Entrepreneurship and Innovation

DESCRIPTION
CEGIS-T is the Center for Management Studies of Instituto Superior Técnico hosted by IST-ID and awarded by FCT with Very Good for the scientific area of Economics and Management in the last evaluation process. CEGIST aims to explore and reinforce the links between management science and engineering approaches to stimulate creativity in problem-solving. This systemic view is the distinctive character of CEGIST. CEGIST’s overall objective is to promote research opportunities associated with the development of knowledge, processes, tools, and methods required to make decisions and to shape public policies, to configure organizational structures and normative systems, to design engineering systems in sustainable patterns, and to solve problems associated with the information-intensive technology-based economy. CEGIST core research activity focuses on appropriate problem formulations and solutions, on the design and modelling of systems, support to decision processes, public policies and planning, enabling technology transfer and the transition to more sustainable patterns of development.

STRATEGIC AIDS
CEGIS-T’s organizational structure and research strategy is built with the purpose of promoting multi- and interdisciplinary research, acknowledging the existence of five research areas: 1) DECISION Science and management engineering (DECISION); 2) systems modelling and Methods of Operations research And analySics (MOSAIC); 3) Strategy, Entrepreneurship and Innovation (SEI); 4) Operations, Logistics and Supply Chain Management (OpLog), and 5) Strategic approaches to Environment and Sustainability (SENSU). CEGIST’s strategy is thus to encourage the cross-fertilization of the five areas to promote transversal research areas and growing synergies, the need to ensure the functioning of public services and market failures, as well as the European governance model as an example of governance in the whole world. The Center is governed by a) free, independent and objective research, carried out individually or collectively; b) researchers are responsible for the methods and outcomes of the investigation; c) research is carried out taking into account a common scientific objective and as an instrument for the improvement of society; and d) knowledge is shared, in dialogue with different scientific disciplines and cultures. CEGIST’s strategic objectives are to contribute to improving practices and finding appropriate legal solutions that can influence policy makers, create networks and promote research with universities and academics from different countries; promote the publication of original articles by integrated members and associates of CEGIST and doctoral students, with peer review; promote and support projects, junior and senior research; facilitate the transfer of knowledge in the academic community, public institutions and civil society. The Center develops its work around a single line of research, subdivided into four research groups: Group 1 - Fiscal governance; Group 2 - Globalization, economic integration, and development; Group 3 - Market and Social Values in a Globalized Economy; Group 4 - Crises, Public Policies, Fiscal Policy, and the Euro.

MAJOR AREAS AND LINES OF RESEARCH
1) Decision Support Methods (e.g., award of the 2017 Gold Medal of the International Society on Multiple Criteria Decision-Making to one of CEGIST researcher; the MACBETH socio-technical approach for developing multi-criteria evaluation models is widely applied in a variety of contexts); 2) Operations, logistics and supply chain management (e.g., strong engagement in the development of strategic and operational solutions in emerging areas, including sustainable supply chains, and advanced smart production and logistics systems); 3) Strategy, entrepreneurship and innovation (e.g., leading role in international advanced education and research programs like the Carnegie Mellon-Portugal program); and 4) Strategic approaches to environment and sustainability (e.g., CEGIST researchers have a leading role in methodological, participatory and applied research; award of the 2015 Lifetime Achievement Award of the International Association for Impact Assessment (IAIA) to one of CEGIST researcher).

CIDEFF
CENTRE FOR RESEARCH IN EUROPEAN ECONOMIC, FINANCIAL AND TAX LAW

COORDINATOR
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KEYWORDS
Public policies; Budgetary policies; Financial crisis; European monetary union

DESCRIPTION
CIDEFF promotes research into the economic and legal challenges raised by the democratic deficit in European governance. CIGEDEFF’s strategy is to encourage the cross-fertilization of the five areas to promote transversal research areas and growing synergies, the need to ensure the functioning of public services and market failures, as well as the European governance model as an example of governance in the whole world. The Center is governed by a) free, independent and objective research, carried out individually or collectively; b) researchers are responsible for the methods and outcomes of the investigation; c) research is carried out taking into account a common scientific objective and as an instrument for the improvement of society; and d) knowledge is shared, in dialogue with different scientific disciplines and cultures. CIDEFF’s strategic objectives are to contribute to improving practices and finding appropriate legal solutions that can influence policy makers, create networks and promote research with universities and academics from different countries; promote the publication of original articles by integrated members and associates of CIDEFF and doctoral students, with peer review; promote and support projects, junior and senior research; facilitate the transfer of knowledge in the academic community, public institutions and civil society. The Center develops its work around a single line of research, subdivided into four research groups: Group 1 - Fiscal governance; Group 2 - Globalization, economic integration, and development; Group 3 - Market and Social Values in a Globalized Economy; Group 4 - Crises, Public Policies, Fiscal Policy, and the Euro.

STRATEGIC AIDS
The Center’s investigation is subdivided into four thematic lines, which address the following issues: i) legal and fiscal institutions; the fight against tax havens, aggressive tax planning, exchange of information, movement of persons, services and capital, competition among states in order to attract investment, patriotism and tax and tax exile deal under Group I - Tax Governance. Growing interdependency among states, international law of natural resources, the role, and effects of global trade on the sustainability of natural resources, resource price volatility dealt under Group II - Globalization, Economic Integration and Development. Public policies and legal solutions to address market failures in a globalized economy, namely through market-based instruments such as competition policy or by adequate regulation will investigate and define political and legal solutions for access to natural resources, the effects of international trade and the sustainability and environmental impact of trade, considering the challenges faced by Member States, BRICS, Developing Countries and the USA. Group III has Prof. Dr. Miguel Moura e Silva as PR. Wealth and income inequality, the global challenges posed by the climate crisis, Big Tech regulation and the post-pandemic recovery create challenges to the global economic order. This Group will investigate and define political and legal solutions adopting an interdisciplinary logic of legal, economic, political and social analysis in the context of competitive markets. The PR of this Group Prof. Dr. Nazaré Costa Cabral. Future prospects for monetary and fiscal policies in EMU will be investigated, in particular the prospects for European Economic Governance, including the review of European fiscal rules and their legal framework.

MAJOR AREAS AND LINES OF RESEARCH
The PR of Group I is Prof. Dr. Ana Paula Dourado. It aims to investigate the current challenges imposed by the geographical and institutional fragmentation, the fight against tax havens, aggressive tax planning, exchange of information, movement of persons, services and capital, competition among states in order to attract investment, patriotism and tax and tax exile deal under Group I - Tax Governance. Growing interdependency among states, international law of natural resources, the role, and effects of global trade on the sustainability of natural resources, resource price volatility dealt under Group II - Globalization, Economic Integration and Development. Public policies and legal solutions to address market failures in a globalized economy, namely through market-based instruments such as competition policy or by adequate regulation will investigate and define political and legal solutions for access to natural resources, the effects of international trade and the sustainability and environmental impact of trade, considering the challenges faced by Member States, BRICS, Developing Countries and the USA. Group III has Prof. Dr. Miguel Moura e Silva as PR. Wealth and income inequality, the global challenges posed by the climate crisis, Big Tech regulation and the post-pandemic recovery create challenges to the global economic order. This Group will investigate and define political and legal solutions adopting an interdisciplinary logic of legal, economic, political and social analysis in the context of competitive markets. The PR of this Group Prof. Dr. Nazaré Costa Cabral. Future prospects for monetary and fiscal policies in EMU will be investigated, in particular the prospects for European Economic Governance, including the review of European fiscal rules and their legal framework.
The mission of the Institute of Education of the University of Lisbon (IE-ULisboa) embraces the domains of research, teaching, community intervention, and support to public policies and programs in the area of education and training. Regarding research, IE-ULisboa develops a comprehensive study of education (with special emphasis on Portuguese society and on the societies and cultures with which there are historical relations, in the European space and in other geographical spaces) and to produce relevant inputs for a knowledge-based transformation of educational systems and practices. For this mission, IE-ULisboa has a unique research unit – Research & Development Center on Education and Training (UIDEF). In the scope of teaching, IE-ULisboa has a diversified gradient and post-graduate offer (including a PhD in Education with several areas of specialization, and other courses in partnership with schools from the ULisboa and other universities), aiming to qualify educators, teachers, trainers, higher education technicians and other professionals involved in educational activities or in organizations with an educational or training dimension. IE-ULisboa develops community intervention activities, in educational or training dimension. IE ULisboa activities or in organizations with an educational or training dimension. IE ULisboa develops community intervention activities, in educational or training dimension. IE ULisboa activities or in organizations with an educational or training dimension. IE ULisboa activities or in organizations with an educational or training dimension. IE ULisboa activities or in organizations with an educational or training dimension. IE ULisboa activities.
CIEG
INTERDISCIPLINARY CENTRE FOR GENDER STUDIES

DESCRIPTION
CIEG is an R&D institution integrated in ISCSP-ULisboa, and is a pioneering research centre, the only one in Portugal entirely dedicated to Gender Studies. It was created in 2012 and classified as Excellent in 2015 and in 2019 by panels of international evaluators. This recognition is linked to its intense activity and its ability to involve, in a short time, 48 researchers from 18 areas of knowledge and 16 universities. The three biggest attributes of CIEG concern: 1) the fact that it involves senior researchers in the field of Gender Studies in Portugal, with a recognized and long international career in areas such as Sociology, Law, Education, Psychology, History and Social Policy, as well as junior researchers and doctoral students; 2) the multi and interdisciplinary stance that characterizes the research produced by the Center; and 3) the connection established between the Portuguese-speaking world, with more than 200 million speakers, Europe, North America and South America. CIEG filled an important gap by creating a network of researchers who contribute to the consolidation of Gender Studies in Portugal and the internationalization of its activities.

STRATEGIC AIDS
i) continuity and reinforcement of participation in research projects, mainly international, and in international research networks. Integration of PhD and Master’s students in these projects; ii) a significant increase in the publication of articles in scientific journals, indexed on international bases; iii) transfer and dissemination of knowledge (e.g. organization of events, postgraduate courses, specialized training in IG). Existing courses are expected to continue and new ST courses will be opened; iv) increase of the research team (integrated and collaborative, scholarship holders). The challenge is the promotion of greater involvement between researchers, as well as publishing collaborations with scholars outside CIEG. It will be essential to reduce the teaching load in order to obtain conditions for scientific publication; and v) strengthening of the Center’s internationalization.

MAJOR AREAS AND LINES OF RESEARCH
Areas of greatest recognition: a) Gender Equality over the Lifecourse; b) GE and social inequalities; c) GE, work and organizations (companies, municipalities, unions, sexual harassment and bullying); d) GE in Higher Education Institutions; e) Gender-based violence (violence against women, during violence, and against LGBTQI+ people); f) Work and Family Mf; g) Evaluation of Equality Plans; h) Gender and Disability Studies; i) Gender and Migrations; j) Gender, Space and Architecture; and k) History of Feminisms in Portugal. Intensification of the following scientific areas: a) Masculinities; b) Gender, health and medicine; c) Gender, education and citizenship; d) Gender, racism and intersectionality; and e) Colonial and Post-Colonial Studies.

CIDP
LISBON CENTRE FOR RESEARCH IN PUBLIC LAW

DESCRIPTION
Lisbon Public Law (CIDP) is an R&D unit hosted by Instituto de Ciências Jurídico-Políticas within the University of Lisbon School of Law. In 2020, CIDP was acknowledged as the top legal research unit in Portugal by its «Excellent» classification awarded in the international evaluation conducted by the Portuguese Research Council (FCT). Its activities are focused on four main areas, oriented towards a new Public Law research agenda powered by a sound scholarly tradition in: (1) Constitutional Law & Political Science; (2) Administrative Law; (3) Public International Law & European Union Law, as well as (4) Legal Theory & Philosophy of Law. CIDP runs an innovative and interdisciplinary research programme anchored in high-quality teaching, a commitment to enhancing the social impact of knowledge, and an active interregional research policy led by ICIP (Instituto de Ciências Jurídico-Políticas) within the University of Lisbon School of Law.

STRATEGIC AIDS
The research agenda of the Public Law Research Center (CIDP) responds to the challenges of the technological revolution, democracy and citizenship, seeking to improve public governance and contribute to sustainable public policies at the social, economic and environmental level. The scientific work of CIDP covers, for example, the new regulatory challenges posed by technological innovation; the emergence of e-democracy and cyber society and its dangers; cybersecurity and regulation of cyberspace or the transformation of the public sector in the light of the technological revolution. Organized into four research groups, from constitutional law and political science to international and European law to the theory and philosophy of law, the CIDP agenda encompasses new and old challenges for democracy, such as populism, nationalism and "authoritarian constitutionalism"; national citizenship, European citizenship and citizenship in the Community of Portuguese Speaking Countries (CPLP); judicial dialogue and the protection of fundamental rights. In the area of administrative, national and international law, CIDP researchers contribute to efficiency and accountability in public governance; the formulation of public policies for sustainability; multilevel regulation of investment in the blue and green economies, as well as in public goods; and the strengthening of Portuguese administration in the EU context.

MAJOR AREAS AND LINES OF RESEARCH
The Research Center Lisbon Public Law is organized into the following Research Groups: a) Constitutional Law and Political Science; b) Administrative Law; c) International and European Public Law; and d) Legal Theory and Philosophy of Law.
CEMAPRE is a member of the research consortium REM – Research in Economics and Mathematics.

**Mathematics Applied to Forecasting and Economic Decision**

CEMAPRE is part of the research consortium REM – Research in Economics and Decision Making, Forecasting and Economic Mathematics Applied to CEMAPRE. The consortium REM consists of several research groups, including Econometrics, Operational Research and Computation, Statistics and Actuarial Science. The researchers have the autonomy to choose the subjects of their research within the mentioned areas and are encouraged to publish in the best journals. They are motivated to participate in conferences abroad and invite researchers from foreign universities in order to promote the internationalization of CEMAPRE’s activities. For the next years, they intend to continue to improve the integration of our research activities within the consortium REM.

**Major Areas and Lines of Research**

CEMAPRE research interests include the following 4 major areas/groups: 1) The Econometrics group is heterogeneous and conducts research in distinct areas of Econometrics. While some members exclusively conduct empirical research, others focus on theory. The majority, however, combine these two strands of research; 2) The Economics and Mathematics of Complex Systems group is a multidisciplinary group that consists of mathematicians and economists who contribute to tackling human problems using their modeling expertise. Many of these contributions rely on the feedback of social phenomena, which, in addition to material constraints, are also a result of human decision processes; 3) The Economics and Mathematics of Complex Systems group is a multidisciplinary group that consists of mathematicians and economists who contribute to the modeling and analysis of the main issues of the Asian contemporary history and current affairs and research of excellence.

**Strategic Aims**

CEMAPRE aims to continue developing research in the scientific areas of the Mathematics department of ISEG which are Analysis and Mathematical Finance, Econometrics, Operational Research and Computation, Statistics and Actuarial Science. The researchers have the autonomy to choose the subjects of their research within the mentioned areas and are encouraged to publish in the best journals. Through the distribution of funding, researchers are motivated to participate in conferences abroad and invite researchers from foreign universities in order to promote the internationalization of CEMAPRE’s activities. For the next years, they intend to continue to improve the integration of our research activities within the consortium REM.

**Keywords**

(REM): Macroeconomics; Econometrics; Microeconomics; Applied Mathematics; Statistics and Actuarial Modeling.

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**IO Orient Institute**

**Coordinator**

Filipe Saraiva de Oliveira

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**Very Good**

Evaluation (2019)

70 FTE researchers

1,34 M€ Funding FCT

**Keywords**

Asian Studies; International Relations; Strategy; Anthropology; Foreign Policy; Asian-European relations.

**Description**

Established in 1989 and integrated in the Institute of Social and Political Sciences (ISCSP) of the Universidade de Lisboa (ULisboa), the Orient Institute (OI) is an experienced research unit in Portugal dedicated to Asian Studies. Constituted by a multidisciplinary team of experts in Social Sciences (as Political Science, International Relations and Political Anthropology), aiming to gather knowledge on Asian societies and its historical and political relations with the Western World. Its mission is to contribute to scientific progress through the comprehension and analysis of the main issues of the Asian contemporary history and current affairs and research of excellence.

**Strategic Aims**

Strategic goals of the unit are: i) Contribute for the scientific progress on the diverse aspects of contemporary Asia and in a Post-Western World. With a tradition of conducting research with experience, excellence and skills to develop concepts, IO has the capacity to understand these new phenomena; ii) Keep its benchmark for all who are interested in Asian Studies and the dynamics in the Post-Western World; iii) Promote links and memory between Lusophone countries and Asian countries, extracting the confluences and mutual interests; and iv) Keep the advisory and consultancy services to governmental, public and private institutions, and expand those services to Lusophone institutions interested to approach Asia and vice-versa.

**Major Areas and Lines of Research**

The current research fields of IO are: East Asia, Southeast Asia and South Asia, and Middle East and Central Asia.
The Research Center for Psychological Science (CICPSI) is a unique in Portugal; and 3 FCT-funded projects and careers of both senior and junior researchers. Thecidpcc-coordinator@ul.is.org is invited as keynote speakers in leading scientific meetings (e.g., International Congress of Applied Psychology: Health and Well-being), and are invited as keynote speakers in leading scientific meetings (e.g., International Congress of Applied Psychology: Health and Well-being). The research conducted by ProAdapt has provided evidence for public policies (e.g., employment conditions of temporary agency workers, the dissemination of knowledge to the academic community, to the legal community and to society.

MAJOR AREAS AND LINES OF RESEARCH
Research groups corresponding to 3 major trends in the study of Criminal Law and Criminal Procedure, which cut across each topic area (Models of criminal imputation and behavioral sciences – Knowledge of the person in Philosophy and in the Sciences and criminal liability, Theory of Society and Criminal Liability, and Internationalisation of Criminal Law and Criminal Procedure and International Criminal Law). Each group brings together researchers who, despite dealing with the same topic area, have different perspectives, which enables critical reflection and constructive discussion of the results obtained. The research is linked with that carried out on the PhD, Masters and other postgraduate courses. The research results are disseminated via conferences, theses and other scientific publications, including the CIDPCC journal.

STRATEGIC AIMS
The definition of the CIDPCC’s strategic objectives is governed by two leading ideas: criminal law differs greatly with fundamental rights, and criminal rules and decisions relate to the projection of deeper content on personality and human behavior. Accordingly, the Centre’s objectives are: a) to conduct innovative practices in scientific research on criminal law and criminal policy which contribute to a critical analysis of the criminal system; b) to develop true scientific interdisciplinarity which enables the fundamental criteria of criminal law to be met; c) to promote and support the projects and careers of both senior and junior researchers and of Masters and PhD students;
SOCIUS is a member of the consortium CSG – Research in Social Sciences and Management:

**SOCIUS RESEARCH CENTRE IN ECONOMIC AND ORGANIZATIONAL SOCIOLOGY**

SOCIUS is currently integrated within CSG - Research in Social Sciences and Management, created in May 1991 by teachers and researchers. SOCIUS is accredited by FCT – Fundação para a Ciência e Tecnologia, and has been classified as “Excellent” concerning the Evaluation of R&D Institutions, since 1999. The SOCIUS research team consists mainly of ISEG faculty members, plus full time research fellows and post-doc research fellows, as well as faculty from other universities. SOCIUS main area of scientific activity, that of economic and organizational sociology, is considered in its broadest sense, encompassing numerous points of contact between contemporary sociology and economics, in addition to other scientific approaches which study economic and organizational reality. Over the years, participation in scientific networks has been a major priority. An active and prominent role has been taken in the development of networks with national and international partner institutions to promote knowledge sharing, collaborative research projects and debate on common fields of research.

**STRATEGIC AIMS**

SOCIUS, Research Centre in Economic and Organizational Sociology, is a research unit from ISEG - School of Economics & Management, Universidade de Lisboa, created in May 1991 by teachers and researchers. SOCIUS is accredited by FCT – Fundação para a Ciência e Tecnologia, and has been classified as “Excellent” concerning the Evaluation of R&D Institutions, since 1999. The SOCIUS research team consists mainly of ISEG faculty members, plus full time research fellows and post-doc research fellows, as well as faculty from other universities. SOCIUS main area of scientific activity, that of economic and organizational sociology, is considered in its broadest sense, encompassing numerous points of contact between contemporary sociology and economics, in addition to other scientific approaches which study economic and organizational reality. Over the years, participation in scientific networks has been a major priority. An active and prominent role has been taken in the development of networks with national and international partner institutions to promote knowledge sharing, collaborative research projects and debate on common fields of research.

**MAJOR AREAS AND LINES OF RESEARCH**

The principal areas of research and work lie in the field of Economic and Organizational Sociology, and essentially focus on the following lines of research, are: a) Work, Employment, Gender and Organizations; b) Science, Technology, Health and Professions; c) Sustainable Development, the Tertiary Sector and Social Networks; d) Globalisation, Economics, Space and Culture;

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**KEYWORDS**

(CSG): Economic Sociology; Organizations and Business; Economic History; Development Studies; Sustainability Sciences; Socioeconomics.

**COORDINATOR**

Júlio Alípio dos Reis-Patrocínio

**DESCRIPTION**

**VERY GOOD**

Evaluation (2019)

120 FTE researchers

2,19 M€ Funding FCT

**MAJOR AREAS AND LINES OF RESEARCH**

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**COORDINATOR**

Pedro José Marto Neves

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**DESCRIPTION**

**VERY GOOD**

Evaluation (2019)

120 FTE researchers

2,19 M€ Funding FCT

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The principal areas of research and work lie in the field of Economic and Organizational Sociology, and essentially focus on the following lines of research, are: a) Work, Employment, Gender and Organizations; b) Science, Technology, Health and Professions; c) Sustainable Development, the Tertiary Sector and Social Networks; d) Globalisation, Economics, Space and Culture.
UECE is a member of the research consortium REM – Research in Economics and Mathematics:RESEARCH UNIT ONUECE Economics and Econometrics of Education.

The Macroeconomics Group has 16 members, some of them also with links with Banco de Portugal. Several topics of research include fiscal policy, monetary policy alongside macroeconomic modelling and DSGE modelling. The group conducts both theoretical and applied research using lab and field experimental methods and non-experimental survey data. These research areas have been particularly productive.

UECE - Research Unit on Complexity and Economics

António Afonso

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SCIENTIFIC OUTPUT

1,34 M€ Funding FCT

KEYWORDS
(REM): Macroeconomics; Econometrics; Microeconomics; Applied Mathematics; Statistics and Actuarial Modeling

STRAIGHT AIMS
UECE - Research Unit on Complexity and Economics is a research centre of ISEG, Lisbon School of Economics and Management, whose mission is to contribute to the advancement of scientific knowledge mainly in the area of Economics, but also in the Sciences of Complexity and in interdisciplinary areas. UECE currently has 41 members, 7 research associates, and 21 PhD students. The main UECE goals are: Promoting research on Economic Sciences, with emphasis on theoretical and applied economic analysis, in the areas of Macroeconomics and Monetary Economics, Microeconomics, Markets and Finance, and Complex Economic Systems; Developing new statistical methods applied to economics; Organising seminars, conferences and other events to disseminate scientific results; Participating in international research networks and promoting the participation of researchers in international congresses and conferences; Promoting and publishing articles, working papers and other documents to stimulate research in the abovementioned areas. Other outputs and activities of interest include: Hosting scientific events (conferences, workshops, and seminars) that aim at disseminating scientific results and attracting leading international scholars to interact with the members of UECE and postgraduate students. Examples of such events are the following recurrent conferences: UECE Lisbon Meetings: Game Theory and Applications; UECE conference on Economic and Financial Adjustments in Europe; Lisbon Research Workshop on Economics and Econometric of Education. Many of these contributions rely on the feedback of social phenomena, which, in addition to material constraints, are also a result of human decision processes. The unit hosts an ambitious plan for seminars, conferences, and workshop events aimed at building a culture of sharing practices to facilitate cross-disciplinary orientation of research and student mentoring.

MAJOR AREAS AND LINES OF RESEARCH
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This is an important mission which creates a positive impact on the Portuguese society and economy. At the same time, this keeps the program from being purely academically oriented. The unit hosts an ambitious plan for seminars, conferences, and workshop events aimed at building a culture of sharing practices to facilitate cross-disciplinary orientation of research and student mentoring.

PEARLS OF WISDOM

UECE is an active centre for disseminating scientific results, hosting scientific events aimed at building a culture of sharing practices to facilitate cross-disciplinary orientation of research and student mentoring. This is an important mission which creates a positive impact on the Portuguese society and economy.

SOCIAL SCIENCES

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UECE - Research Unit on Complexity and Economics is a research centre of ISEG, Lisbon School of Economics and Management, whose mission is to contribute to the advancement of scientific knowledge mainly in the area of Economics, but also in the Sciences of Complexity and in interdisciplinary areas. UECE currently has 41 members, 7 research associates, and 21 PhD students. The main UECE goals are: Promoting research on Economic Sciences, with emphasis on theoretical and applied economic analysis, in the areas of Macroeconomics and Monetary Economics, Microeconomics, Markets and Finance, and Complex Economic Systems; Developing new statistical methods applied to economics; Organising seminars, conferences and other events to disseminate scientific results; Participating in international research networks and promoting the participation of researchers in international congresses and conferences; Promoting and publishing articles, working papers and other documents to stimulate research in the abovementioned areas. Other outputs and activities of interest include: Hosting scientific events (conferences, workshops, and seminars) that aim at disseminating scientific results and attracting leading international scholars to interact with the members of UECE and postgraduate students. Examples of such events are the following recurrent conferences: UECE Lisbon Meetings: Game Theory and Applications; UECE conference on Economic and Financial Adjustments in Europe; Lisbon Research Workshop on Economics and Econometric of Education. Many of these contributions rely on the feedback of social phenomena, which, in addition to material constraints, are also a result of human decision processes. The unit hosts an ambitious plan for seminars, conferences, and workshop events aimed at building a culture of sharing practices to facilitate cross-disciplinary orientation of research and student mentoring.

MAJOR AREAS AND LINES OF RESEARCH
The Macroeconomics Group has 16 members, some of them also with links with Banco de Portugal. Several topics of research include fiscal policy, monetary policy alongside macroeconomic modelling and DSGE modelling. Other lines of research deal with macroeconomic dynamics, macro prudential policies and household indebtedness, government efficiency analysis, and international economic and financial integration, euro area long-term sovereign bond yields, macroeconomics of imperfect competition, firm dynamics and macroeconomic dynamics or on the mathematics of macroeconomic dynamics, measuring the output gap, and the relevance of public investment for economic activity. The Economics and Mathematics of Complex Systems group is a multidisciplinary group that consists of 7 mathematicians and 7 economists who contribute to tackling human problems using their modelling expertise. Some of them also work in the Portuguese public sector.

This is an important mission which creates a positive impact on the Portuguese society and economy. At the same time, this keeps the program from being purely academically oriented. The unit hosts an ambitious plan for seminars, conferences, and workshop events aimed at building a culture of sharing practices to facilitate cross-disciplinary orientation of research and student mentoring.

PEARLS OF WISDOM

UECE is an active centre for disseminating scientific results, hosting scientific events aimed at building a culture of sharing practices to facilitate cross-disciplinary orientation of research and student mentoring. This is an important mission which creates a positive impact on the Portuguese society and economy.
## ASSOCIATED LABORATORIES WITH THE PARTICIPATION OF ULISBOA AND ITS R&D UNITS

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## ULISBOA R&D UNITS

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