

ACTIVITY REPORT 2020

INDEX

EDITORIAL	4
MANAGEMENT BODIES	5
OFFICES OF THE SCHOOL	5
EEUM'S NUMBERS	6
EMPLOYABILITY INITIATIVES	6
RESEARCH	7
KNOWLEDGE AGGREGATION PLATFORMS	8
INTERFACES	9
RANKINGS	9
INTERNATIONALISATION	10
COMMUNICATION	11
MAIN EVENTS	12
DEPARTMENT OF BIOLOGICAL ENGINEERING	14
DEPARTMENT OF CIVIL ENGINEERING	18
DEPARTMENT OF INDUSTRIAL ELECTRONICS	24
DEPARTMENT OF POLYMER ENGINEERING	28
DEPARTMENT OF TEXTILE ENGINEERING	32
DEPARTMENT OF INFORMATICS	36
DEPARTMENT OF PRODUCTION AND SYSTEMS	42
DEPARTMENT OF INFORMATION SYSTEMS	48
DEPARTMENT OF MECHANICAL ENGINEERING	52
CENTRE OF BIOLOGICAL ENGINEERING	56
ALGORITMI RESEARCH CENTRE	62
CENTER FOR MICROELECTROMECHANICS SYSTEMS	68
CENTRE FOR TERRITORY, ENVIRONMENT AND CONSTRUCTION	72
INSTITUTE FOR SUSTAINABILITY AND INNOVATION IN STRUCTURAL ENGINEERING	78
HIGH-ASSURANCE SOFTWARE LABORATORY	84
CENTRE FOR SCIENCE AND TEXTILE TECHNOLOGY	88
MECHANICAL ENGINEERING AND RESOURCE SUSTAINABILITY CENTER	92
INSTITUTE FOR POLYMERS AND COMPOSITES	96

EDITORIAL



Pedro Martins Arezes

President



António Augusto Vicente

Vice-President



Estela Bicho Erhagen

Vice-President



Maribel Yasmina Santos

Vice-President

The year 2020 was, despite the pandemic that devastated and had repercussions in all sectors of activity, another year of positive derivation in the main activities of the School of Engineering of the University of Minho (EEUM).

The teaching projects revealed their attractiveness and sustainability in the National Competition for Access to Higher Education, with 99.1% of the places placed in the 1st phase of the National Competition for Access to Higher Education being filled, and an average Demand Satisfaction Index of 0.99. Concerning the number of students enrolled, in the Undergraduate and Integrated Masters the value was 5020 (0.763% higher than in 2019/20), in the Masters it was 611 (4% higher than in 2019/20) and in the Doctoral degrees it was 609 (22.3% higher than in 2019/2020).

EEUM had, during 2020, 194 research projects underway with a total allocation for the School of Engineering of about 48M€, to which should be added about 29M€ referring to 3 projects in collaboration with the company BOSCH, totalling 197 projects with a total allocation for the School of Engineering of more than 77M€. The average allocation for the period under review is €22 million. In addition to these figures, there is more than €1 million corresponding to 20 projects under the Erasmus+ Programme (Key Action 2).

The School of Engineering also had 133 ongoing projects with the TecMinho Interfaces, the Centre for Waste Recovery - CVR, the Centre for Computer Graphics - CCG and the Polymer Engineering Innovation Hub - PIEP, with a total budget of around 14M€.

The 9 EEUM research centres have added 1473 scientific articles indexed in the Scopus/WoS databases. In 2020, 75 doctoral theses were completed, 12 patent applications were submitted nationally and 10 patent applications were submitted internationally; 6 international patents were granted in that period.

As a School oriented to society, its activity is evident through numerous partnerships with business, national and international. In 2020, 7 Research Centres of EEUM - ALGORITMI Centre, Institute for Sustainability and Innovation in Engineering Structures - ISISE, Centre for Biological Engineering - CEB, Centre for Territory, Environment and Construction - CTAC, Institute for Polymers and Composites - IPC, Centre for Electromechanical Microsystems - CMEMS and High-Assurance Software Laboratory - HASLab were involved in activities in 8 Collaborative Laboratories, namely, Built Colab (ISISE), ECOLab (CEB and CTAC), Probiorefinery, CoLab4Food and Vines&Wines (CEB), DTx (ALGORITMI, IPC and CMEMS), Vortex (HASLab) and ProChild (ALGORITMI).

Still within the scope of Interaction with Society, in 2020 the School maintained close links with the region's business community, meeting with representatives of various companies from different sectors of activity to develop innovation projects and explore other opportunities for collaboration. In parallel, EEUM maintained its commitment to a greater connection with the local authorities of the Quadrilateral, in particular with Guimarães City Council, through the appointment of António Cunha and, subsequently, of Carlos Bernardo and Pedro Arezes to the executive presidency of the Office of Crisis and Economic Transition of Guimarães.

In 2020 the brand signature "Tomorrow Needs Engineering" was also launched, an initiative framed within the action programme and the activity plan of the current presidency and intended to reaffirm the positioning of the School of Engineering as a teaching and research institution of excellence in the most varied areas of Engineering.

Three new protocols, one confidentiality agreement, one service provision contract, two patent licensing contracts and two addendae to protocols with national entities were signed, establishing collaborations in the areas of teaching and research, including sharing of research results, provision of services, among other forms of cooperation.

The Bosch project continues to leverage the R&D&I of the University of Minho, in particular at EEUM, attracting the attention of other companies, enhancing other collaborations in various sectors of activity and strengthening EEUM's position in a network of national and international research institutions that covers more than 60 countries on all continents.

Following the internationalisation strategy, in 2020, 14 collaboration agreements were signed with foreign institutions, including 4 protocols, 2 Material Transfer Agreements, 2 Non-Disclosure Agreements, 1 Commercial Licence Agreement, among others.

In terms of Communication and Image, EEUM reinforced its commitment to communication, content transmission and online interaction with its various audiences, having organised and supported the organisation of several events. The podcast "In the core of Engineering" was created to discuss several topics of interest to the various EEUM audiences, with a total of 15 episodes in 2020, which became available on another content platform for EEUM: Spotify. The Communication Office (EEUM GCI) organised the 3rd edition of "Engenharia: Falar é Fácil?!", aimed at promoting science communication among researchers of the School of Engineering and simultaneously promoting greater knowledge about the various areas of engineering to secondary school students. During 2020, following the strategy adopted in previous years and given the pandemic, the EEUM GCI reinforced the focus on live broadcasting of contents to shorten the distance between campuses and also to keep available contents that the community could not consume live or in person. EEUM was referenced in about 269 articles or reports in the media during 2020. These results and others in this report make the EEUM Presidency proud and reflect the high performance of the various EEUM sub-units.

MANAGEMENT BODIES

[School Council](#)

[Pedagogical Council](#)

[Scientific Council](#)

[Management Council](#)

OFFICES OF THE SCHOOL

[Financial Implementation Support Office](#)

[Informatic Support Office](#)

[Internationalization Office](#)

[Communications Office](#)

[Presidency Secretariat](#)

[School's Secretary](#)

EEUM'S NUMBERS

9

Departments

6583

Students

954 MSc
609 PhD

342

PhD Faculty

85,15 Invited

102

Non-Teaching Staff

3

Habilitation
Exams

TRAINING PROGRAMMES

1

1st Cycle

13

Integrated
Masters

23

2nd Cycle

22

3rd Cycle

EMPLOYABILITY INITIATIVES

83

Participating Companies

"Dia do Emprego"
Job Fair Event in February 13th

2500

Career Opportunities

RESEARCH

9

Research Centres

* Size of centres by No. of PhD full members.



CEB



ALGORITMI



ISISE



CMEMS



CTAC



HASLab



2C2T



METRICS



IPC

8

Centres evaluated with Very Good and Excellent

459

Integrated Researchers

75

Completed PhD's

1473

Scientific articles indexed in SCOPUS/WoS

18

Awards

194

49% managed by EEUM's Financial Implementation Support Office

R&D projects

6

Patents

22 M€

8,3M€ - 3 projects with Bosch company

Average Annual Allocation

3,9 M€

133 projects with Interfaces

KNOWLEDGE AGGREGATION PLATFORMS

8

Collaborative Laboratories

ECOLab

Vortex

Probiorefinery

Built Colab

CoLab4Food

ProChild

DTx

Vines&Wines

7

Competitiveness Clusters IAPMEI

7

Protocols/Agreements with national entities

37

Spin-Offs:

BC Technologies	Improveat
Bekoffee - Ingrediente Paralelo	KEEP SOLUTIONS, Lda
Between - Challenge and Success	Magikbee
BioMode	My Power
Biotempo – Consultoria em Biotecnologia, Lda.	NanoPaint
Concept Beer	New Textiles
CPC - Castro, Pinto & Costa, Lda. – Qualidade e Inovação	ParallelPlanes
CriamKnowledge	Primecog
displr	SAR – Soluções de Automação e Robótica, Lda
Earth Essences	Satisfibre
Ecofoot	Sciencentris
Ecoticket	Simbiente – Engenharia e Gestão Ambiental, Lda
ESI – Engenharia, Soluções e Inovação, Lda	SOLFARCOS
EXVA – Experts in Video Analysis	To-Be-Green - Greenadn
Fermentum – Engenharia das Fermentações	Ubisign
Gensys - Generic Systems, Lda	Vinalia
GESTA – Grupo de Estatística Aplicada	WeAdapt
GIVAWARE	X-treme materials
Healthium - Healthcare Software Solutions, Lda	

INTERFACES



The Computer Graphics Centre (CCG) carries out applied research and development activities in the fields of computer graphics, information, communication and electronic technologies.



The Centre for Waste Valorisation (CVR): provides services of research, scientific analysis and application of real solutions in the area of waste valorisation.



The Centre for Innovation in Polymer Engineering (PIEP) develops and supports the creation of innovative products, processing technologies and productive tools, as well as enhancing the creation and transfer of knowledge resulting from the partnership activity with industry in the field of polymer engineering and composites.



TecMinho - Association for University-Company Development provides support for the development of new technologies/products/processes, education and training, organisational development, support for university entrepreneurship and the creation of innovative companies, with special emphasis on academic spin-offs.

RANKINGS



INTERNATIONALISATION

116

International students at EEUM

179

EEUM students abroad

266

International Collaborators in 9 Research Centres

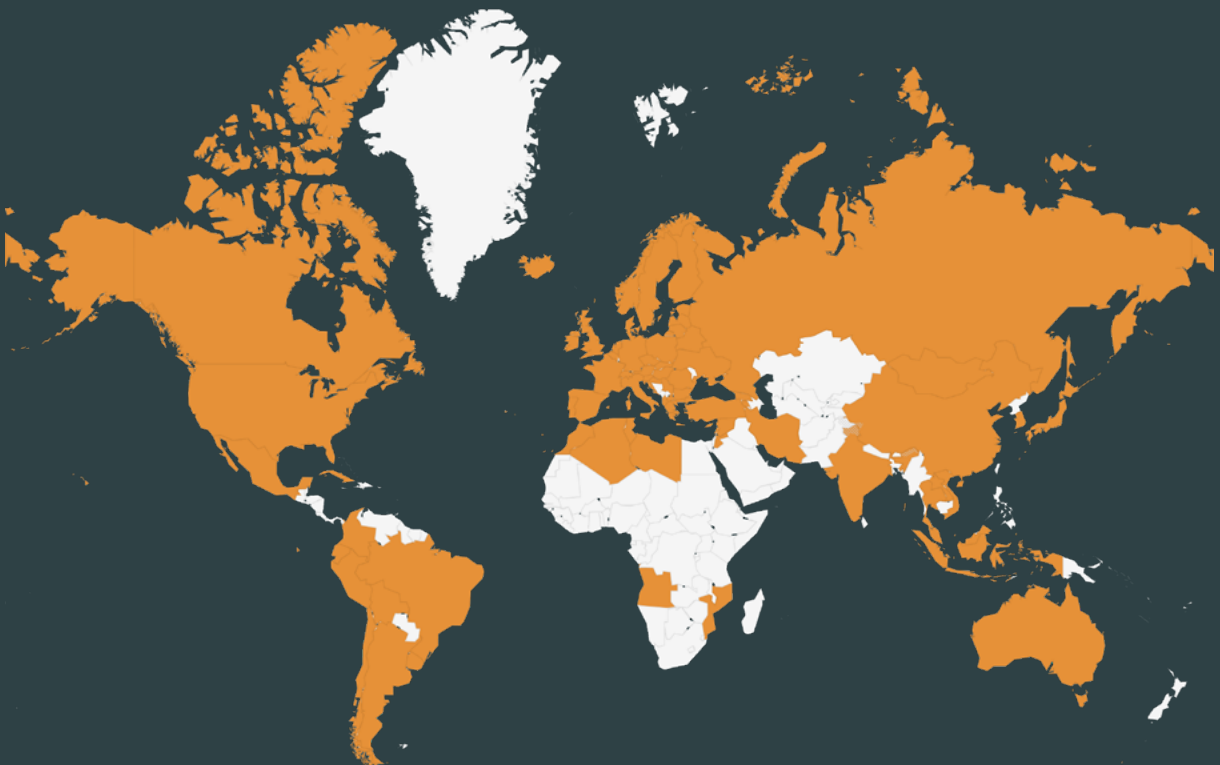
1 M€

from 20 Erasmus+ projects

14

New protocols/agreements with international institutions

Network of partner institutions in approximately 60 countries



COMMUNICATION

871 605

Webpage views

76 536

Visitors

Multimedia

35

Hours of live streams

77

GB of recorded video

1 700

Photos archived

11

Editions of EngiNews Newsletter

26,1% open rate (global average: 21,80%)

13,1% click rate (global average: 2,48%)

269

Articles or features in media

MAIN EVENTS



January

Thinking Talks ENGINEERING & SOCIETY



January

“Dia do Emprego” Job Fair



February

Study and Research in the USA



May

Open Day Masters EEUM 2020/2021



June

UMinho Portas Abertas



June

Graduation Ceremony 2020



October

45th anniversary of the EEUM



December

“The Best Student” Program

DEPARTMENT OF BIOLOGICAL ENGINEERING

Created in 1993, the Department of Biological Engineering (DEB) currently has 6 employees and 20 career teachers all with doctorates. DEB promotes daily the access of students to a teaching of international quality, with professors recognised internationally as the best in their area of research. In this sense, DEB is responsible for two Integrated Masters (in Biological Engineering and Biomedical Engineering) and five Masters (Biotechnology, Bioinformatics, Environmental Management, Micro/Nanotechnologies and Food Technology and Science - the latter in partnership with the Faculty of Sciences of the University of Porto). DEB has partnerships and collaborations with several companies, public institutions and national and foreign higher education entities that allow the exchange and internship of students, providing them with a multicultural and multidisciplinary experience, which highlights the attractiveness of its training offer. DEB also bets on a strong interaction with the exterior participating regularly in forums, fairs, exhibitions and events to promote its courses. DEB's teachers carry out research activities in which they combine fundamental science with engineering sciences to obtain biotechnological products and processes of high added value in the Food, Chemical, Biotechnological and Environmental industries. The natural interaction between research and teaching constitutes an added value for the modernisation and updating of the course contents offered at DEB.

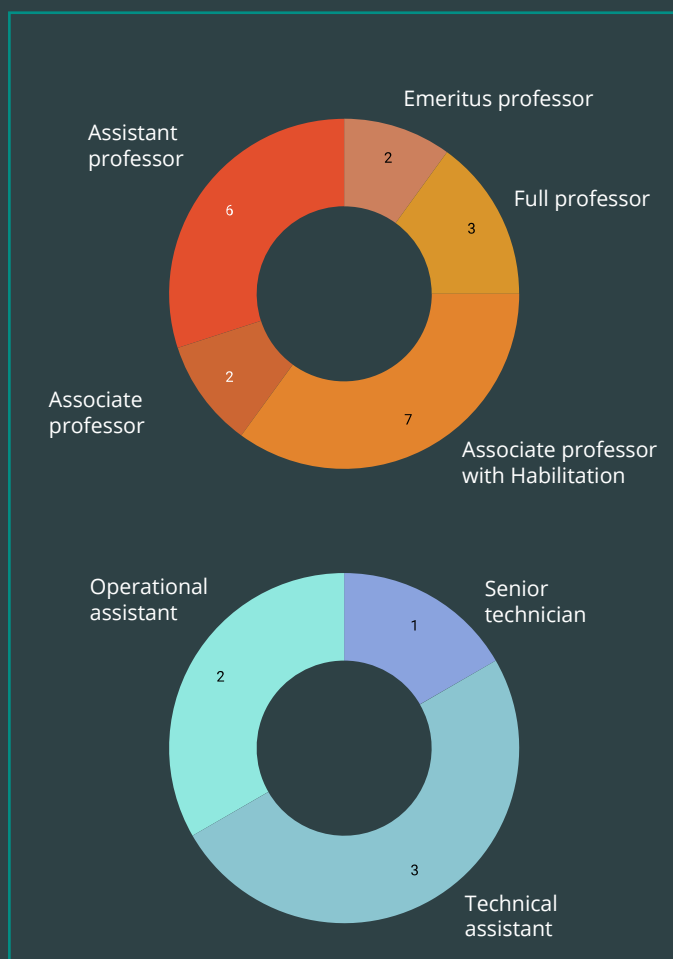


Lúgia Raquel Marona Rodrigues
Director



Mariana Henriques
Deputy Director

STAFF



EVENTS

- XXIII Jornadas de Engenharia Biológica
- Expobiotec 2020 - Engenharia em Mudança

1ST CYCLE + INTEGRATED MASTER

MIEB

INTEGRATED MASTER'S IN BIOLOGICAL ENGINEERING



João Monteiro Peixoto
Director

47
Enrolled

170
Candidates

149,4
Score of last enrolled candidate

MEBiom

BIOMEDICAL ENGINEERING INTEGRATED MASTER'S



Luís António Sousa Barreiros Martins
Director

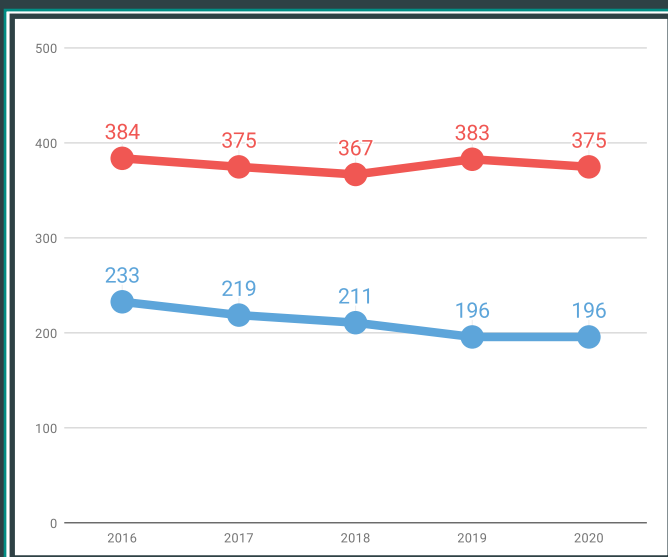
68
Enrolled

414
Candidates

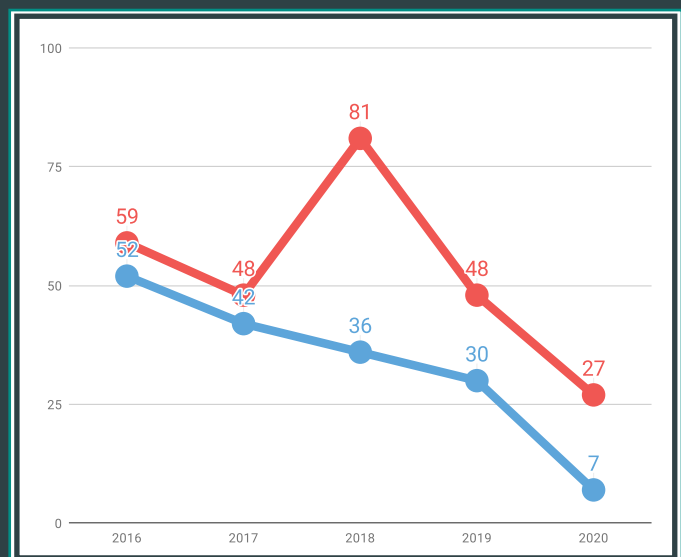
180
Score of last enrolled candidate

Interdepartmental Education Project

ENROLLED STUDENTS



GRADUATES' PROGRESS



2ND CYCLE

MBioinf



Miguel Francisco Pereira Rocha
Director

MASTER'S IN BIOINFORMATICS

Taught in collaboration with:
Faculdade de Ciências -
Universidade do Porto
Interdepartmental Education Project

MBiotec



Lucília Maria Alves R. Domingues
Director

MASTER'S IN BIOTECHNOLOGY

MGA



Maria Olívia Oliveira Pereira
Director

MASTER'S IN ENVIRONMENTAL MANAGEMENT

(Discontinued)
Interdepartmental Education Project

MMNT



Maria Conceição Jesus Rego Paiva
Director

MASTER'S IN MICRO/NANO TECHNOLOGIES

Interdepartmental Education Project

MTCA

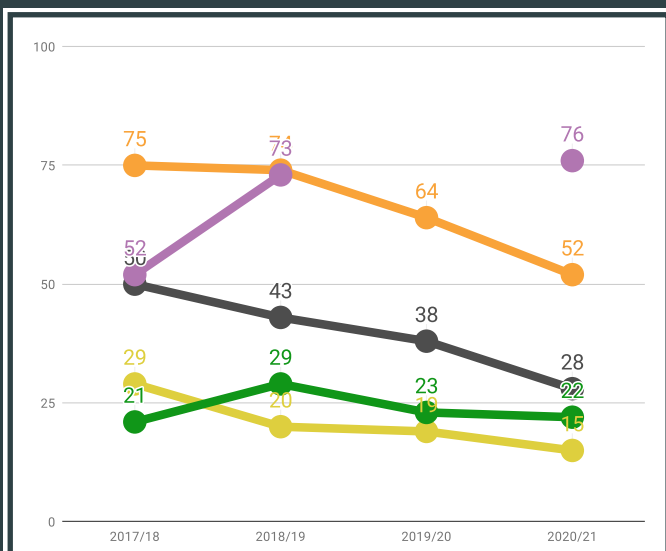


Armando Albino Dias Venâncio
Director

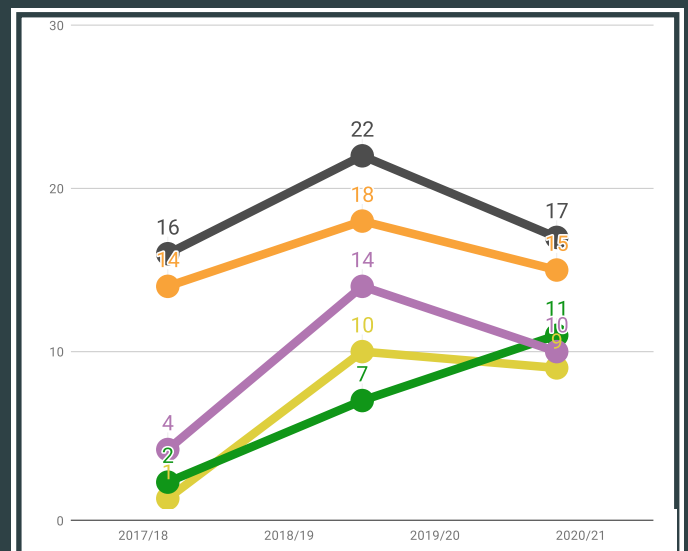
MASTER'S IN FOOD SCIENCE AND TECHNOLOGY

Interdepartmental Education Project

ENROLLED STUDENTS



GRADUATES' PROGRESS



INTEGRATED MASTERS CYCLE DISSERTATIONS
LIST OF UP TO 10 MOST RELEVANT DISSERTATIONS

Implementação de Ferramentas de Análise e Avaliação de Matérias-Primas, Aditivos e Fornecedores/Fabricante

Student: Maria de Fátima Alves Leite de Sá
Supervisor: Armando Venâncio
Company Involved: De Heus

Scale-up production of food grade nanoparticles

Student: Beatriz Sousa Afonso
Supervisor: Eugénio C. Ferreira; Miguel A. Cerqueira
Company Involved: INL

Viabilidade do aproveitamento energético do biogás de aterro de resíduos industriais e licenciamento de ampliação de unidade de compostagem

Student: Ana Francisca Calheiros Dias de Carvalho
Supervisor: João M Peixoto; Mário Aguilár

Co-digestão de lamas de ETAR com efluente industrial da produção de biodiesel

Student: Ana Sofia Sepúlveda Esteves
Supervisor: Ana Júlia Cavaleiro; Raquel Teixeira da Silva
Company Involved: SIMDOURO

Validação e controlo de processos e acompanhamento da eficácia do sistema de rastreabilidade em produtos frescos e transformados segundo o referencial IFS Food versão 6.1

Student: Ana Sofia Pereira Fernandes
Supervisor: Lúgia Rodrigues
Company Involved: Carnes Landeiro

Estudo dos produtos da degradação de corantes reativos

Student: Ana Sofia Jordão Mota Gonçalves
Supervisor: Carla Silva; Maria do Carmo Teixeira
Company Involved: MGC - Acabamentos Têxteis

Characterization of experimentally evolved multidrug resistant strains of *Candida auris*

Student: Rita Brandão Cruz
Supervisor: Mariana Henriques
Company Involved: Erasmus at KUL

Encapsulamento de probióticos para a proteção intestinal contra antibióticos

Student: Catarina Andrea Pereira Monteiro
Supervisor: Lúgia R Rodrigues
Company Involved: Erasmus at BME

The effect of essential oils and their components against postharvest fungal diseases on fruit

Student: Inês Simões Patrício Silva
Supervisor: Mariana Henriques

2ND CYCLE DISSERTATIONS

LIST OF UP TO 5 MOST RELEVANT DISSERTATIONS

A Educação e a Sensibilização como ferramenta de Gestão Ambiental: Proposta de Conceção e Dinamização de Conteúdos

Student: Ana do Carmo Pereira de Azevedo Rodrigues
Supervisor: Luciana Peixoto
Company Involved: Simbiente

Biorremediação de solos contaminados com PAH (hidrocarbonetos aromáticos policíclicos - pireno e fenantreno)

Student: Vitor Bertoluci
Supervisor: Teresa Tavares

Decreto-Lei n.º 39/2018, de 11 de junho - Efeitos da sua aplicação nas Emissões Gasosas na Região Centro

Student: Adão Manuel Salgado Nogueira
Supervisor: João M Peixoto

Estratégias enológicas na gestão do processo de vinificação e estabilização

Student: Maria Manuela Gonçalves Sá
Supervisor: João M Peixoto
Company Involved: Caves Campelo

Desenvolvimento de produtos vegetarianos numa indústria alimentar

Student: Maria Beatriz Mendes Lemos
Supervisor: José A. Teixeira
Company Involved: Seara

Controlo de Qualidade dos Produtos Pré-Embalados (Controlo Metrológico)

Student: Cláudia Isabel da Costa Oliveira
Supervisor: Lúgia R Rodrigues
Company Involved: CampiCarnes

Revisão do plano HACCP numa linha de produção de Vinhos Verdes na Adega Cooperativa de Barcelos

Student: Isabel João Machado Correia da Quinta e Costa
Supervisor: Armando Venâncio
Company Involved: Adega Cooperativa de Barcelos

Evaluation of Ohmic Heating processing on extraction of bioactive compounds from microalgae biomass

Student: Vítor Emanuel da Silva Sousa
Supervisor: Ricardo Pereira; António Vicente

Erythritol production from crude glycerol by *Yarrowia* species: strains comparison and oxygen influence

Student: Ana Margarida Magalhães Ribeiro
Supervisor: Isabel Belo

DEPARTMENT OF CIVIL ENGINEERING

Civil Engineering is the branch of Engineering that encompasses the design, design, construction and maintenance of all structures and infrastructures necessary for the well-being and development of society and the preservation of the built and natural environment. Since 1980, the Department of Civil Engineering integrates the School of Engineering of the University of Minho. Its mission is the development of Civil Engineering according to three vectors: graduate and postgraduate teaching, research and development activities, and partnerships with industry and society. The Integrated Master in Civil Engineering is the main teaching project and aims to train technicians with appropriate skills for their integration in a job market in permanent change and able to contribute to the wealth of companies in the sector and the country. Its recognition has led to the creation of a scholarship and school merit program supported by companies interested in student success. Also noteworthy in the training offer are the Masters in Sustainable Construction and Rehabilitation, the Masters in Urban Engineering and the International Masters in Structural Analysis of Historic Monuments and Constructions. The latter is recognised by the European Commission with the "Erasmus Mundus" seal of excellence. The Department also collaborates in the Masters in Project Management and in Sustainable Management of the Urban Water Cycle. The research and development activities are framed in the Centre for Territory, Environment and Construction (CTAC) and in the Institute for Sustainability and Innovation in Engineering Structures (ISISE).

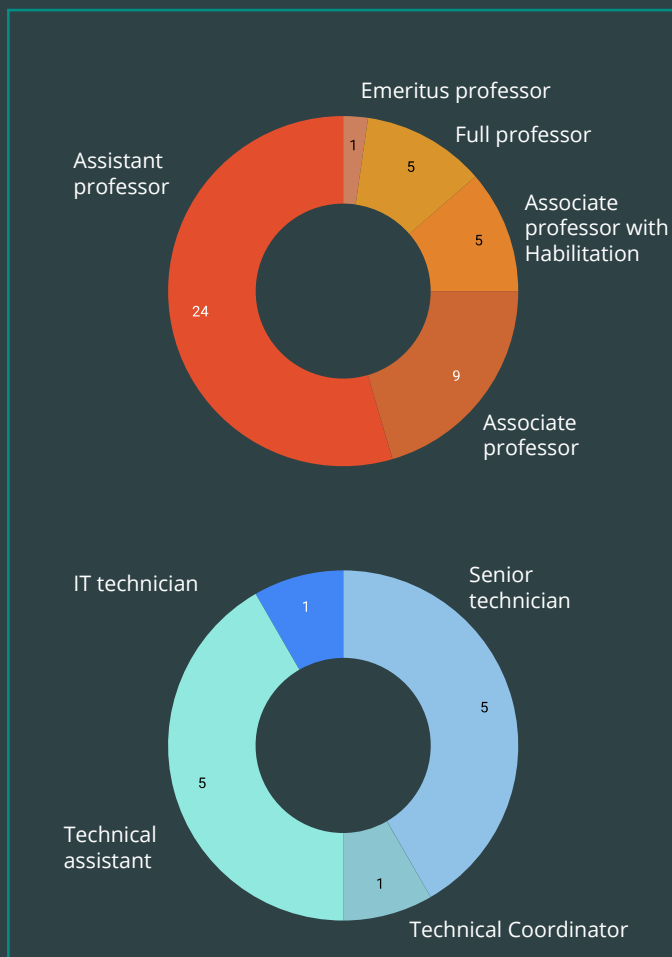


**José Manuel
Cardoso Teixeira**
Director



**Jorge Manuel
Branco**
Deputy Director

STAFF



EVENTS

- Ciclo de Seminários MGPE 2020
- Workshop Gestão de Projetos 2020
- 3rd International Congress on Urban and Civil Engineering, Budapest, Hungary
- PLURIS 2021 - 9º Congresso Luso-Brasileiro para o Planeamento Urbano, Regional, Integrado e Sustentável
- New approach in participation of people for built environment adaptations
- Live Talks of EuroStruct – European Association on Quality Control of Bridges and Structures
- Experiências e desafios no projeto e construção de edifícios
- Water and sustainable food production. New solutions for ancient challenges? (2020). Agricultural Heritage Systems master course at the University of Florence, based on the FAO Programme on "Globally Important Agricultural Heritage Systems". (evento online).
- Stormwater Management–Water Quality Concerns. Workshop Managing Climate Change Effects and Resilience on the Wastewater Urban Sector. Organized by Municipality of Lisbon, European Green Capital 2020, IWA, EWA, APESB, LISWATER, CERIS.
- Gestão sustentável do ciclo urbano da água. Seminário à Licenciatura em Tecnologia e Gestão Municipal do Instituto Superior de Engenharia de Lisboa.
- FRP++ Workshop 2020: Challenges on the composites market for the next 10 years and the role of the academy
- 3RD RILEM SPRING CONVENTION 2020

1ST CYCLE + INTEGRATED MASTER

MIEC

CIVIL ENGINEERING INTEGRATED MASTER'S



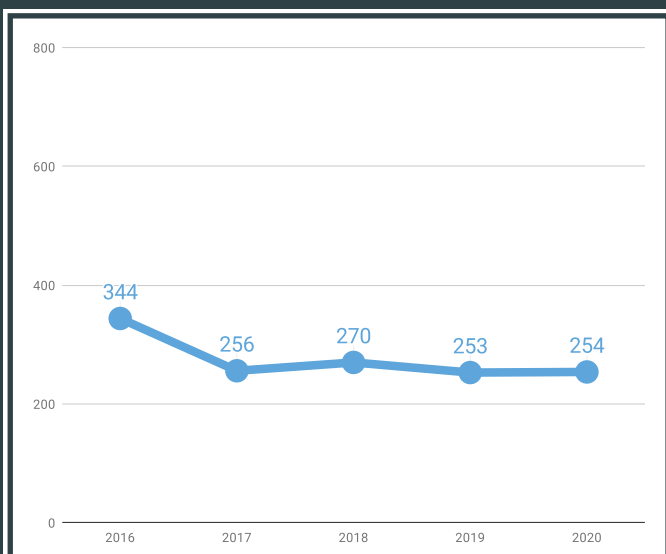
Hugo Manuel
Ribeiro Dias Silva
Director

45
Enrolled

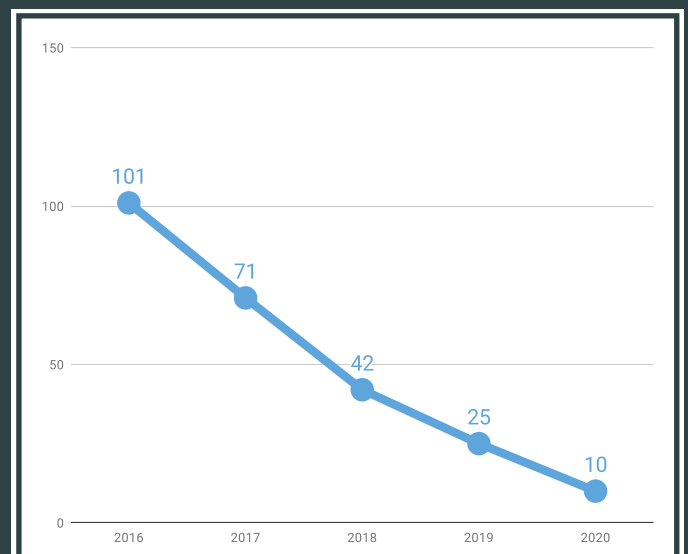
218
Candidates

111,2
Score of last
enrolled candidate

ENROLLED STUDENTS



GRADUATES' PROGRESS



2ND CYCLE

MCRS



Luís Manuel Bragança
Miranda Lopes
Director

MASTER'S IN SUSTAINABLE CONSTRUCTION AND REHABILITATION

MEU



José Luís Silva
Pinho
Director

MASTER'S IN URBAN ENGINEERING

MGPE



João Pedro Pereira
Maia Couto
Director

MASTER'S IN ENGINEERING PROJECT MANAGEMENT

Interdepartmental Education Project



António Armando Lima
Sampaio Duarte
Director

MASTER'S IN SUSTAINABLE MANAGEMENT OF THE URBAN WATER CYCLE

Taught in collaboration with:
University of Coimbra

SAHC



Daniel Vitorino
Castro Oliveira
Director

MASTER'S IN STRUCTURAL ANALYSIS OF MONUMENTS AND HISTORICAL CONSTRUCTION

European Master
Interdepartmental Education Project



Eduardo Nuno
Borges Pereira
Director

MASTER'S IN STRUCTURAL ENGINEERING



Miguel Ângelo
Dias Azenha
Director

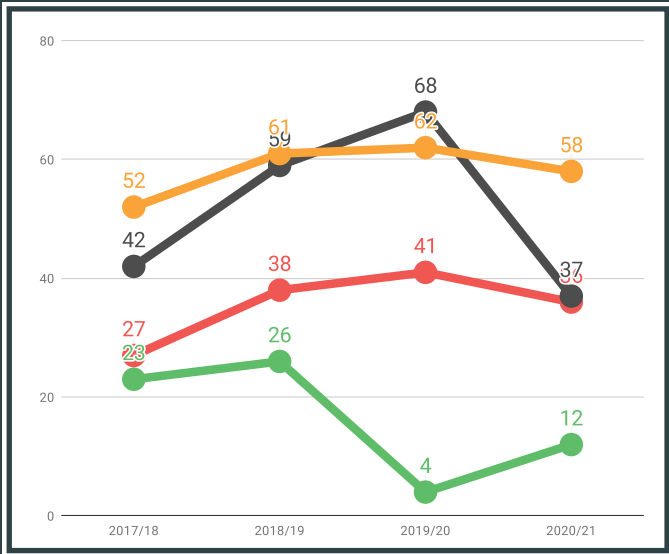
MASTER'S IN BUILDING INFORMATION MODELLING



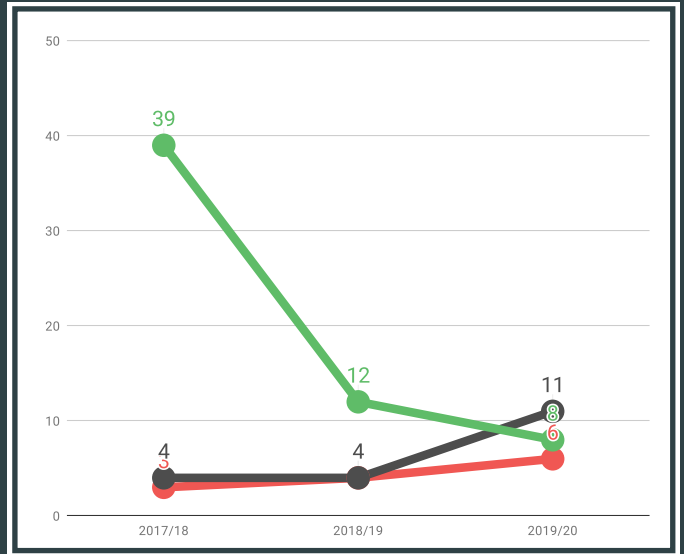
Ricardo F. Mesquita
Silva Mateus
Director

MASTER'S IN SUSTAINABLE BUILT ENVIRONMENT

ENROLLED STUDENTS



GRADUATES' PROGRESS



INTEGRATED MASTERS CYCLE DISSERTATIONS
LIST OF UP TO 10 MOST RELEVANT DISSERTATIONS

Integração de Sistemas Solares na Reabilitação de um Edifício Escolar para Atingir os nZEB

Student: Maria João Teles Pereira Alexandre
Supervisor: Sandra Silva

Avaliação da Durabilidade de Elementos Estruturais Mistos em Aço e Betão, Colados e Submetidos a Flexão

Student: Alexandre Rocha Salles
Supervisor: José Barroso Aguiar; Maria Isabel Valente

Qualidade da Água de Piscinas Interiores Públicas e seus Efeitos na Saúde Pública

Student: Fábio Martins Gonçalves
Supervisor: António Duarte

Sistemas verdes de drenagem urbana: avaliação do comportamento hidráulico de canteiros de biofiltração

Student: João Pedro Dias de Oliveira
Supervisor: António Duarte
Company Involved: Laboratório da Paisagem de Guimarães

Aplicação de Metodologias BIM/VR no Betão Pré-fabricado

Student: Tiago João Neto Costa
Supervisor: João Pedro Couto
Company Involved: Grupo Shay Murtagh

Influence of the modification of asphalt mixtures on their behaviour at low temperatures

Student: Ana Paula Rocha da Costa Dias
Supervisor: Hugo Silva

Avaliação dos tempos de presa de misturas cimentícias por resistividade elétrica

Student: Ricardo da Cruz Silva
Supervisor: Aires Camões Azevedo

Reabilitação de Edifícios visando a Eficiência Energética e a Qualidade do Ambiente Interior

Student: André Alves
Supervisor: Sandra Silva; Ricardo Mateus

BIM na Construção e Manutenção de um Edifício

Student: Tiago Manuel Barros Barreiro
Supervisor: José Cardoso Teixeira

2ND CYCLE DISSERTATIONS

LIST OF UP TO 5 MOST RELEVANT DISSERTATIONS

Aplicação do BIM em Gestão de Operações: proposta de metodologia e aplicação piloto

Student: Taís Pinto Magalhães
Supervisor: Miguel Azenha

Análise dos Indicadores de Desenvolvimento Sustentável em Planos Diretores

Student: Deisi Hartke dos Santos
Supervisor: José Cardoso Teixeira

Metodologia de Apoio à Gestão da Manutenção de Edifícios Através do Método MAIER

Student: Marta Mayer Feitosa de Oliveira
Supervisor: Dinis Leitão; Jorge Branco

A utilização do BIM na análise da eficiência energética de edifícios: ferramentas e interoperabilidade

Student: Alice de Castro Cantele Coelho
Supervisor: Ricardo Mateus; Sandra Monteiro Silva

Aplicação da Metodologia BIM em Análises de Ciclo da Vida (LCA)

Student: Ismael Botelho Alecrim
Supervisor: Luís Bragança

Métodos de Avaliação de Sustentabilidade para Edifícios Hospitalares - proposta de lista de indicadores e sistema de pesos adaptáveis para o contexto brasileiro

Student: Marília Neves Fonseca Azevedo da Costa
Supervisor: Ricardo Mateus; Maria de Fátima Castro

Renovação de edifícios brasileiros para obter melhor eficiência energética e qualidade do ambiente interno

Student: Rafaella Tecchio Klaus
Supervisor: Sandra Monteiro Silva; Ricardo Mateus

Definition of reference buildings to determine the effect of energy renovation measures at a neighbourhood scale. Application to a study case in Braga

Student: Marjorie Zúñiga
Supervisor: Manuela Almeida; Ricardo Barbosa

Post War Sustainable Rehabilitation in Syria (Historic Public Buildings in Aleppo)

Student: Wesam Mahfoud
Supervisor: José Cardoso Teixeira

Towards efficient BIM use of underground geotechnical data

Student: Mohamad El Sibai
Supervisor: Miguel Azenha

Análise da morfodinâmica de estuários sob o efeito das mudanças climáticas.

Student: William Weber Melo
Supervisor: José Luís da Silva Pinho

Numerical safety assessment of earthen structures in La Alhambra, Granada, Spain

Student: Annalaura Vuoto
Supervisor: Javier Ortega; Paulo B. Lourenço

Seismic behaviour and strengthening of the Myin Pya Gu Temple

Student: Tha Zin
Supervisor: Nuno Mendes; Paulo B. Lourenço

Anisotropic nonlinear homogenized constitutive model of masonry walls

Student: Michel Chalhoub
Supervisor: Paulo B. Lourenço; Luís C. Silva

Safety Assessment of the Archaeological Tunnels in Copán – Honduras

Student: Felipe Vale Pires

Supervisor: Paulo B. Lourenço; Alessandro Flora

Assessment of the Beira Railway Station

Student: Belen Gizachew Alemu

Supervisor: José Sena Cruz; Javier Ortega

Algorithm-aided Information Design: Hybrid Design approach on the edge of Associative Methodologies in AEC

Student: Evgenii Ermolenko

Supervisor: Bruno Figueiredo

Coordinated specification and quantity take-off through digital modelling

Student: Lucas Lima Vieira

Supervisor: Miguel Azenha; José Granja

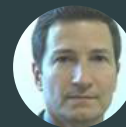
BIM-based Framework for Deconstructability Assessment of Steel Structures

Student: Camilo Mercado Siles

Supervisor: Maria Isabel Brito Valente

DEPARTMENT OF INDUSTRIAL ELECTRONICS

Created in 1989, the Department of Industrial Electronics (DEI) is a department of the School of Engineering located in the two campuses of the University of Minho (Azurém campus in Guimarães and Gualtar campus in Braga). The DEI is composed of an experienced and highly qualified teaching staff, consisting of 28 PhD Professors who develop activities in close collaboration with the scientific community and the business fabric. The main objective of DEI is to offer high quality teaching and research projects in its four Disciplinary Areas: - Electronic Instrumentation and Microsystems; - Control, Automation and Robotics; - Industrial Informatics and Embedded Systems; - Power and Energy Electronics. DEI participates in teaching projects of the School of Engineering of the University of Minho that contemplate training in several areas, always with a high practical and laboratorial component, having as fundamental objective to train highly qualified Engineers capable of an autonomous work of development and innovation. The participation of DEI in the training of Engineers contributes to the creation and use of new technologies, which improve competitiveness and sustainability in vast areas such as Industrial and Service Robotics, Factory Automation, Electrical Installations, Energy Efficiency, Electrical Machinery, Renewable Energy, Electrical Mobility, Consumer Electronics, Microtechnologies and Microelectronics, Dedicated Microprocessors and Compilers, Software and Multimedia Industry, Information Systems Security, Mobile Cell Networks, Wireless Sensor Networks, Optical Communications Systems and Automotive Electronics.

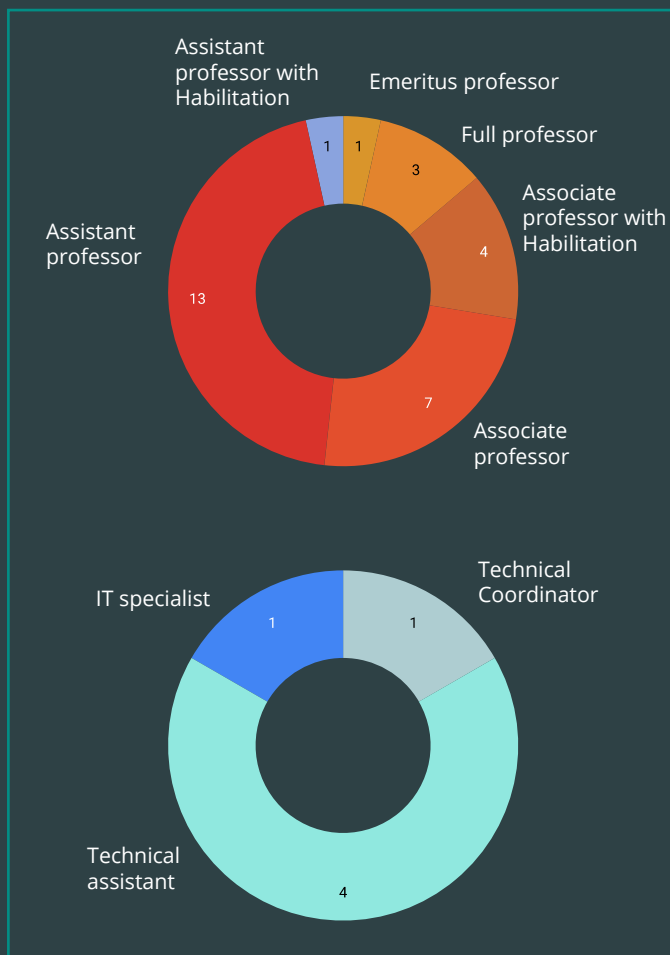


João Luis Afonso
Director



Graça Maria Henriques Minas
Deputy Director

STAFF



EVENTS

- i9Masks - Development of innovative masks in PDMS for the protection of COVID-19 with the use of last generation technologies
- EAI SESC - International Conference on Sustainable Energy for Smart Cities
- IX Symposium of the Power Electronics and Energy Group from University of Minho
- Synposium of Electronics Engineering 2020 (Orhanized by the Student Branch of Industrial Electronics and Computing Engineering from University of Minho (NEEEICUM))
- Special Session "Electric Vehicles and Smart Grids" - IEEE CPE-POWERENG 2020 - 14th International Conference on Compatibility, Power Electronics and Power Engineering
- EAI S-CUBE 2020 - 11th EAI International Conference on Sensor Systems and Software

1ST CYCLE + INTEGRATED MASTER

MIEEIC

INDUSTRIAL ELECTRONICS AND COMPUTERS ENGINEERING INTEGRATED MASTER'S



Jaime Francisco
Cruz Fonseca
Director

94
Enrolled

435
Candidates

146,2
Score of last
enrolled candidate

MIETI

TELECOMMUNICATIONS AND INFORMATICS ENGINEERING INTEGRATED MASTER'S



António Luís
Duarte Costa
Director

43
Enrolled

237
Candidates

123,8
Score of last
enrolled candidate

Interdepartmental Education Project

MIEBiom

BIOMEDICAL ENGINEERING INTEGRATED MASTER'S



Luís António Sousa
Barreiros Martins
Director

68
Enrolled

414
Candidates

180
Score of last
enrolled candidate

Interdepartmental Education Project

MIEF

PHYSICS ENGINEERING INTEGRATED MASTER'S



João Pedro Santos
Hall Agorreta Alpuim
Director

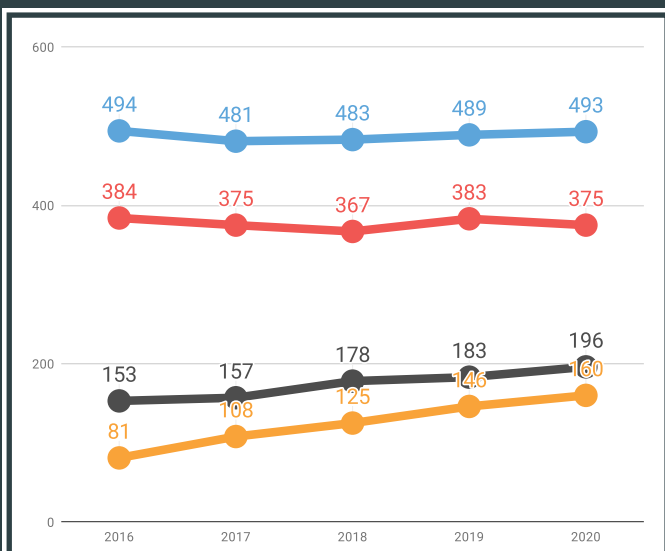
37
Enrolled

231
Candidates

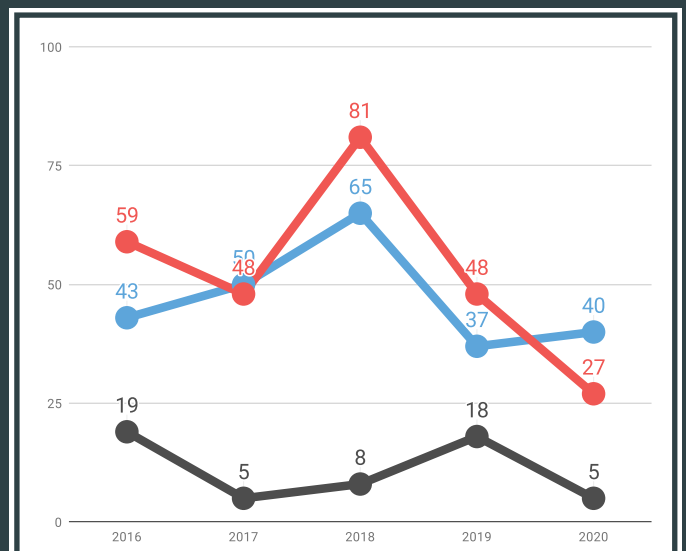
174,4
Score of last
enrolled candidate

Interdepartmental Education Project

ENROLLED STUDENTS



GRADUATES' PROGRESS



2ND CYCLE

MEM



António Alberto
Caetano Monteiro
Director

MASTER'S IN MECHATRONICS ENGINEERING

Interdepartmental Education Project

MMNT

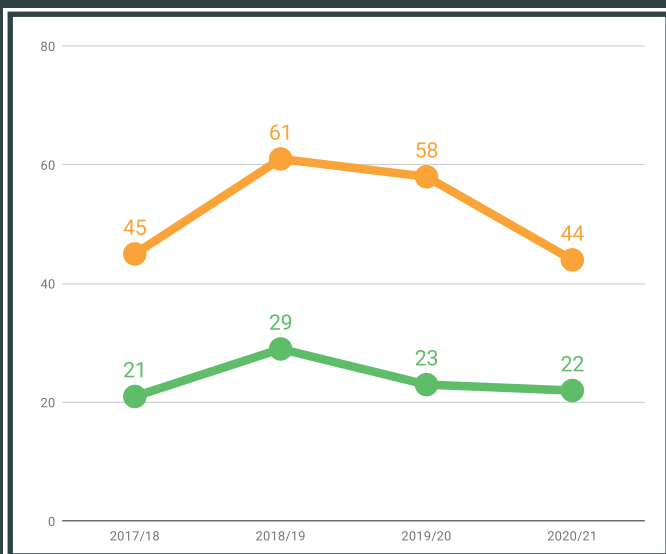


Maria Conceição
Jesus Rego Paiva
Director

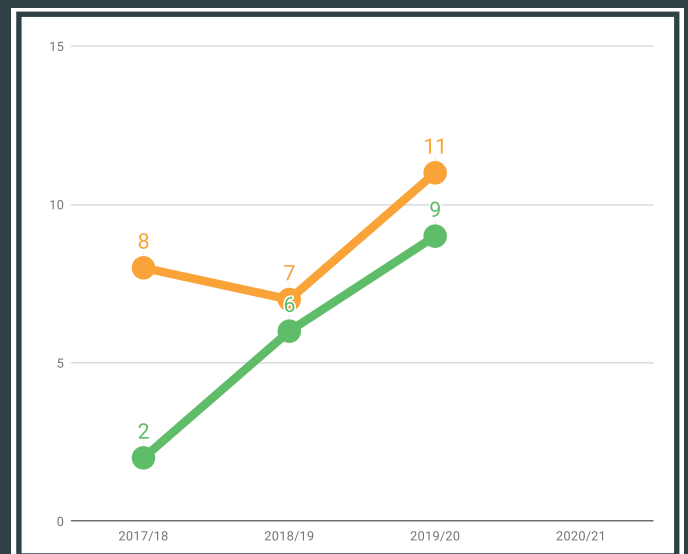
MASTER'S IN MICRO/ NANO TECHNOLOGIES

Interdepartmental Education Project

ENROLLED STUDENTS



GRADUATES' PROGRESS



INTEGRATED MASTERS CYCLE DISSERTATIONS
LIST OF UP TO 10 MOST RELEVANT DISSERTATIONS

A Collaborative Work-Cell to Improve Worker Ergonomics and Productivity

Student: João Gaspar Oliveira Cunha
Supervisor: Estela Bicho

Software/Hardware Co-Design for NB-IoT Low-Power Applications: Consumption and Performance Analysis

Student: Sofia Arriscado Terramoto de Paiva
Supervisor: Jorge Cabral

A Loosely-Coupled Arm and RISC-V Lockstepping Technology

Student: Ivo da Cruz Marques
Supervisor: Adriano Tavares

Efficient Learning of Sequential Tasks for Collaborative

Student: Ana Isabel Barros Cunha
Supervisor: Estela Bicho; Emanuel Sousa

Flexible solutions for autonomous navigation of forklifts in dynamic factory environments

Student: Duarte Soares Teixeira
Supervisor: Luis Louro

Reliable Software Development aided by QEMU Simulation

Student: Rui Jorge Mendes Almeida
Supervisor: Jorge Cabral

Damage detection inside a car using Computer Vision

Student: Sandra Manuela Gonçalves Dixe
Supervisor: José Mendes

Development of Digital Manipulatives for Collaborative Storytelling

Student: Tiago Pires Antunes Sampaio
Supervisor: Filomena Soares

Development of a Single-phase Unified Power Quality Conditioner with Inverted Control

Student: José Pedro Martins Silva
Supervisor: Gabriel Pinto

Ghost Image Removal Code Optimization for Proba-3 Space Mission

Student: Bruno Miguel Freitas Ribeiro
Supervisor: Fernandio Ribeiro

First Advances in Near Fall Detection and Prediction when using a Walker

Student: Ana Rita Simões Pereira
Supervisor: Cristina Santos

Study of Deep Neural Network architectures for medical image segmentation

Student: Ana Patrícia Ribeiro Lopes
Supervisor: Carlos Silva

Rectification, amplification and switching capabilities for energy harvesting systems Power management circuit for piezoelectric energy harvester

Student: Ana Cláudia Rodrigues Ferreira
Supervisor: Higinio Correia

Email Marketing Platform based on Industry 4.0 Paradigms

Student: Alexandra Maria Pires da Silva Leite
Supervisor: José Augusto Afonso

Optical sensor system for monitoring the pH of cellular media: application to an Organ-on-a-chip platform

Student: Fernando Luís Bior Mendes
Supervisor: Raquel O. Rodrigues; Stefan Gassmann

DEPARTMENT OF POLYMER ENGINEERING

The Polymer Engineering Department (DEP) was founded in 1978 to support the national plastics industry through a specific degree and the creation of a body of experts in polymer engineering. Since then, training actions at various levels have been developed, research on various topics of Polymer Science and Engineering through the Research Centres to which its teachers belong (IPC - Instituto de Polímeros e Compósitos) and cooperation with national and foreign companies. This intense activity has allowed the implementation of well-equipped laboratories dedicated to the characterisation of materials at various scales, processing, measurement of properties, digital manufacturing and numerical modelling. The global quality and relevance of the activity are recognised nationally and internationally. Currently, the teaching staff is composed of 17 members, all with PhD degrees and belonging to the discipline area Science and Engineering of Polymers and Composites. The activity is supported by 6 administrative/technical staff.

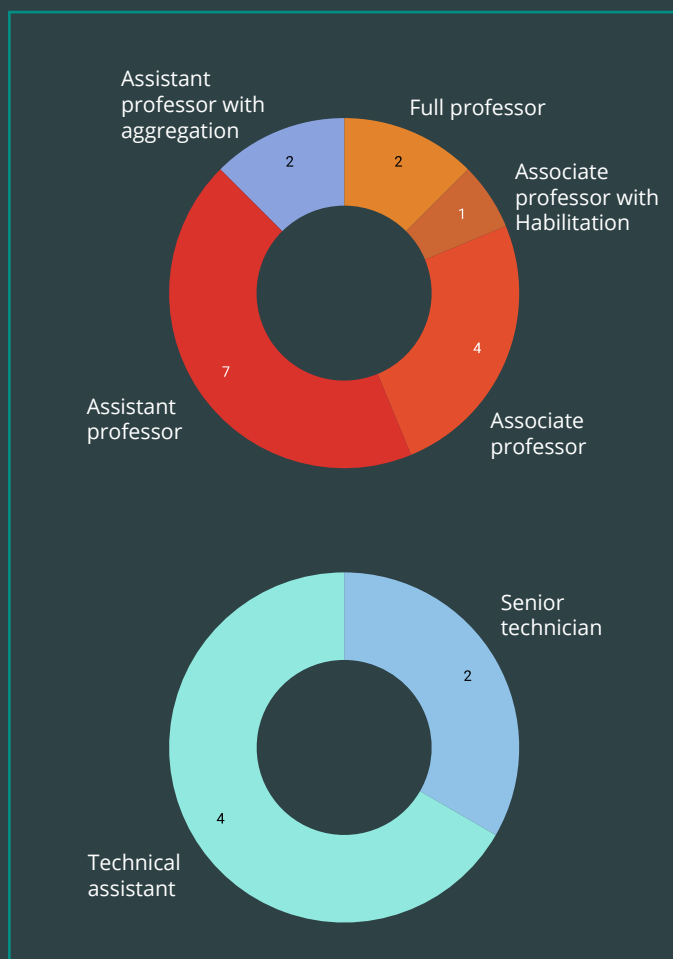


Ana Vera Alves
Machado Nóbrega
Director



António Manuel
Cerqueira Gomes Brito
Deputy Director

STAFF



1ST CYCLE + INTEGRATED MASTER

MIEMAT

MATERIALS ENGINEERING INTEGRATED MASTER'S



29
Enrolled

170
Candidates

Maria Cândida Lobo
Guerra Vilarinho
Director

154,6
Score of last
enrolled candidate

Interdepartmental Education Project

MIEP

POLYMER ENGINEERING INTEGRATED MASTER'S



34
Enrolled

166
Candidates

Carla Isabel
Martins
Director

132,8
Score of last
enrolled candidate

MIEBiom

BIOMEDICAL ENGINEERING INTEGRATED MASTER'S



68
Enrolled

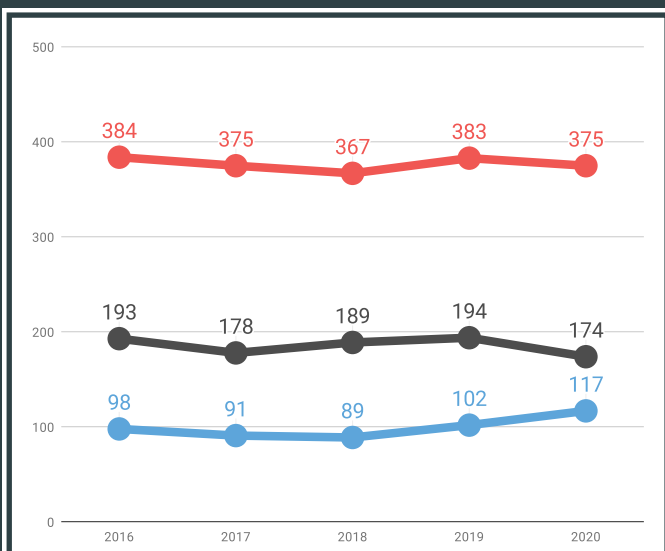
414
Candidates

Luís António Sousa
Barreiros Martins
Director

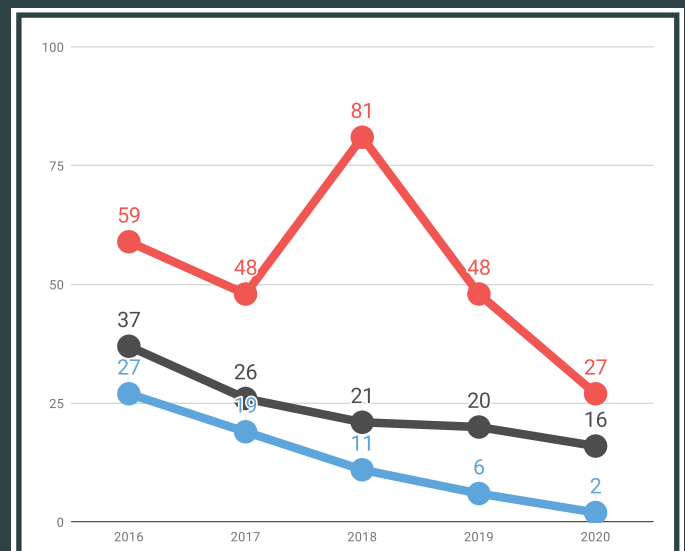
180
Score of last
enrolled candidate

Interdepartmental Education Project

ENROLLED STUDENTS



GRADUATES' PROGRESS



2ND CYCLE

MEP



MASTER'S IN PRODUCT ENGINEERING

António José Vilela Pontes
Director

Interdepartmental Education Project

MMNT

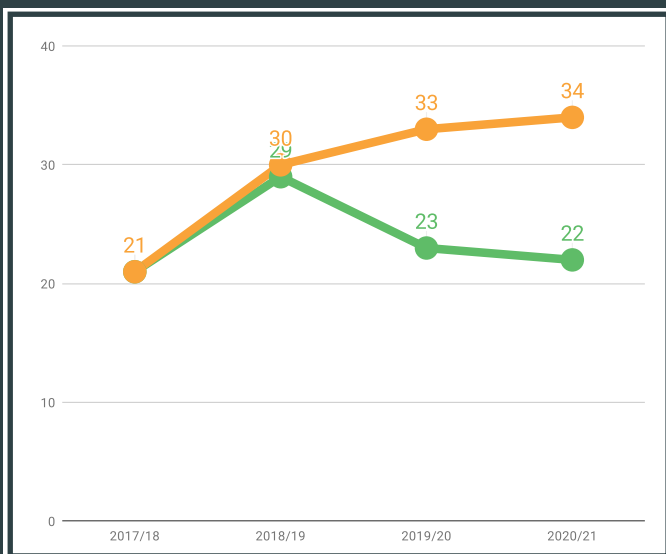


MASTER'S IN MICRO/NANO TECHNOLOGIES

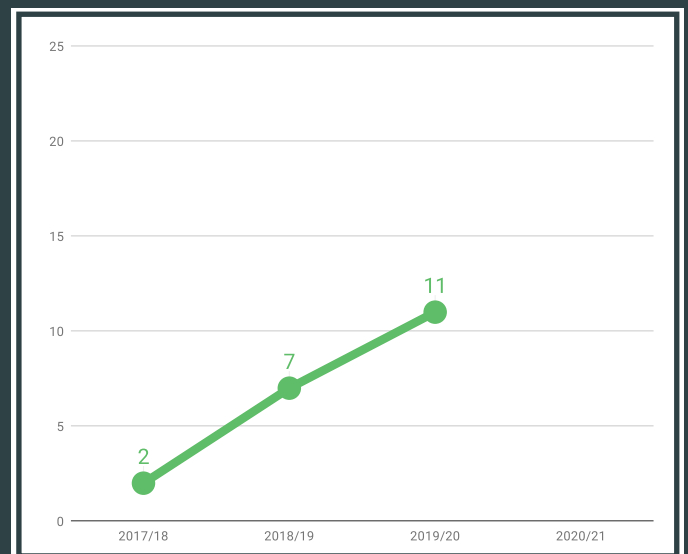
Maria Conceição Jesus Rego Paiva
Director

Interdepartmental Education Project

ENROLLED STUDENTS



GRADUATES' PROGRESS



INTEGRATED MASTERS CYCLE DISSERTATIONS

LIST OF UP TO 10 MOST RELEVANT DISSERTATIONS

Caracterização das propriedades de memória de forma de um poliuretano: influência de parâmetros críticos

Student: Carina Daniela Pereira Peixoto
Supervisor: Olga Machado Sousa Carneiro; Alexandre Ferreira da Silva

Estudo da estabilidade dimensional na co-extrusão de pisos para pneus

Student: Mafalda Alexandra Gonçalves de Freitas Costa
Supervisor: João Miguel de Amorim Novais da Costa Nóbrega; Jorge Manuel Ferreira Veloso
Company Involved: Continental Mabor

Numerical Modeling of the Filling stage of the injection moulding process

Student: João Luís Oliveira Pedro
Supervisor: Célio Bruno Pinto Fernandes; João Miguel de Amorim Novais da Costa Nóbrega

Core back moulding, adhesion+D9:G9 optimization in the joining area

Student: Cristiana Sofia Santos Pinto
Supervisor: Carla Isabel Domingues Correia Martins; Vânia Oliveira
Company Involved: Automoldes

Estudo de defeitos de peças em POM

Student: Ricardo Humberto Peixoto e Dias
Supervisor: António Manuel Cerqueira Gomes Brito; António Julio Carvalho Vieira de Sá
Company Involved: Plasmitec

Deteção de defeitos em materiais compósitos usando tecnologia de ultrassons

Student: Bruno Miguel Alves Coelho
Supervisor: João Pedro Gil Nunes; Joana Mafalda Moura Malheiro
Company Involved: PIEP

Simulação Computacional do Escoamento do Plastisol no Processo de Recobrimento Indireto por Faca

Student: Pedro Rafael Fernandes
Supervisor: João Miguel de Amorim Novais da Costa Nóbrega; Gonçalo Silveira
Company Involved: TMG

Caracterização e Correção de Não Conformidades no Processo de Extrusão de Folha

Student: Vítor Manuel Ribeiro da Silva
Supervisor: Olga Machado Sousa Carneiro; Arnaldo Branco
Company Involved: Intraplás

Desenvolvimento e Controlo do Processo de Discos em PET e PP para Termoformação

Student: Rúben Oliveira Pereira
Supervisor: Olga Machado Sousa Carneiro; Arnaldo Branco
Company Involved: Intraplás

Acetaldehyde generation on preforms with the use of recycled PET

Student: Ana Luísa Geraldo Fernandes
Supervisor: Carla Isabel Domingues Correia Martins; Laurent Degroote
Company Involved: Plastikpak

2ND CYCLE DISSERTATIONS

LIST OF UP TO 5 MOST RELEVANT DISSERTATIONS

Desenvolvimento de um dispositivo médico de auxílio à monitorização da atividade diária de um amputado de membro inferior

Student: Catarina Santos Ferreira
Supervisor: Gustavo Rodrigues Dias; Frederico Carpinteiro
Company Involved: Adapttech

Criação e Implementação de uma metodologia de desenvolvimento de produto por meio de uma aplicação para planeamento, monitorização e controlo do processo.

Student: Bruno Mattos
Supervisor: Gustavo Rodrigues Dias
Company Involved: Electrolux Brasil

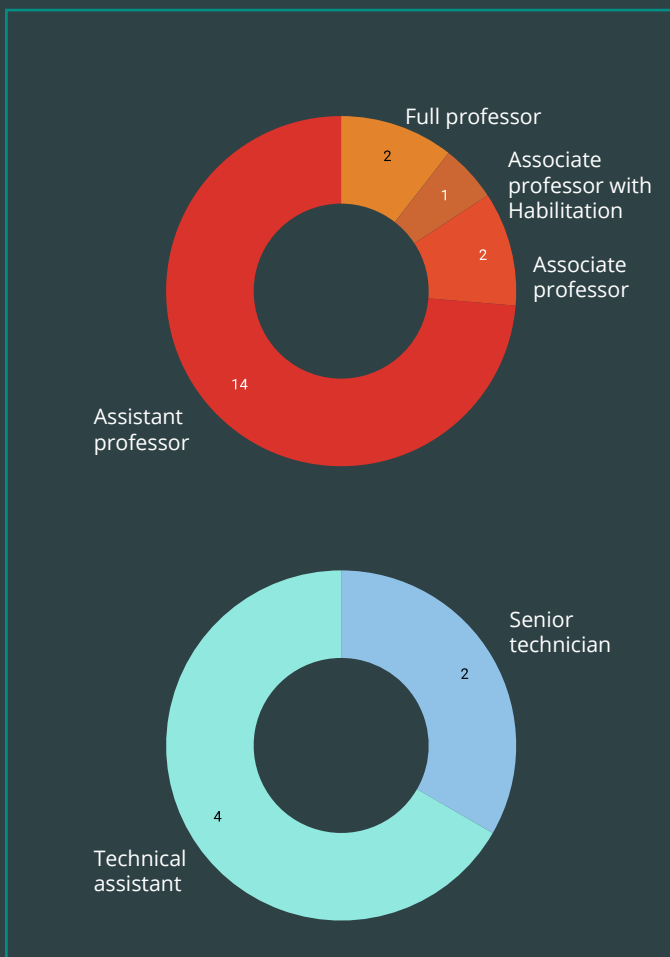
Aplicação da tecnologia de infusão a vácuo e de materiais compósitos para desenvolvimento de novos produtos

Student: Daniela Alexandra da Silva Faria
Supervisor: Gustavo Rodrigues Dias; Ricardo Freitas
Company Involved: PIEP

DEPARTMENT OF TEXTILE ENGINEERING

The Textile Engineering Department (DET) was founded in 1976 with the aim of meeting the needs of the textile sector, located in the north of the country, by training textile engineers capable of dealing with the specificities of the Portuguese textile industry. With the evolution of technologies and markets, the course has been incorporating other skills such as technical textiles and functional finishing. Currently, the main engineering course offered by DET is the Integrated Master in Textile Engineering, a course that incorporates the spirit of Bologna with integrated projects, inspiring students to undertake the development of innovative textile products, using the information provided to them in technological disciplines, with a high scientific basis, to meet the increasingly demanding needs of the sector. The students leave the course able to assume responsibility in production, production management and quality control, but also to follow and implement the latest developments in the various areas of the textile sector. Another course under the responsibility of the department, the degree in Design and Fashion Marketing, enables students to design products associated with fashion. The knowledge they of textile technology they acquire allows them to design industrially feasible products. The DET is also responsible for the Master courses in Design of Fashion Communication and Design and Marketing of Textile Products, Clothing and Accessories. The department also participates in the Master courses of Micro and Nanotechnologies, Product Engineering, Engineering and Quality Management, the Integrated Master courses in Industrial Management and Engineering, Human Engineering, and the degrees in Product Design, Visual Arts and Chemistry.

STAFF



António Pedro Souto
Director



Helder Carvalho
Deputy Director

EVENTS

- Interdisciplinary Project 1 - Exhibition of works
- UModa 2020

1ST CYCLE + INTEGRATED MASTER

DMM

FASHION DESIGN AND MARKETING BACHELOR



António Manuel Dinis
Ribeiro Marques
Director

33
Enrolled

233
Candidates

161,2
Score of last
enrolled candidate

MIET

TEXTILE ENGINEERING INTEGRATED MASTER'S



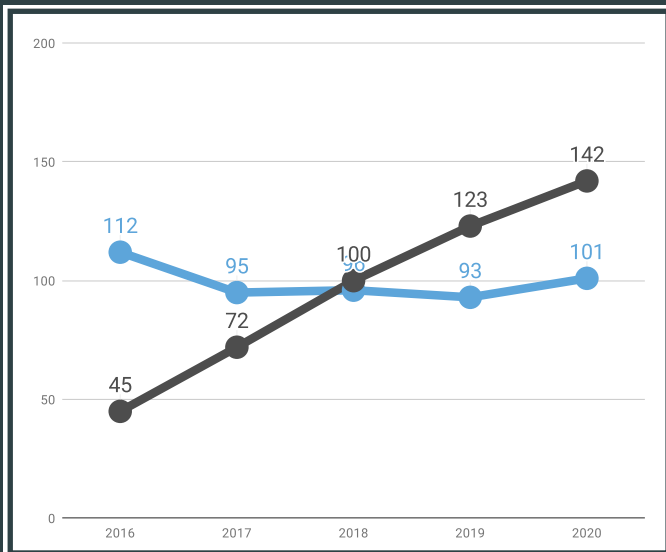
Maria José Araújo
Marques Abreu
Director

31
Enrolled

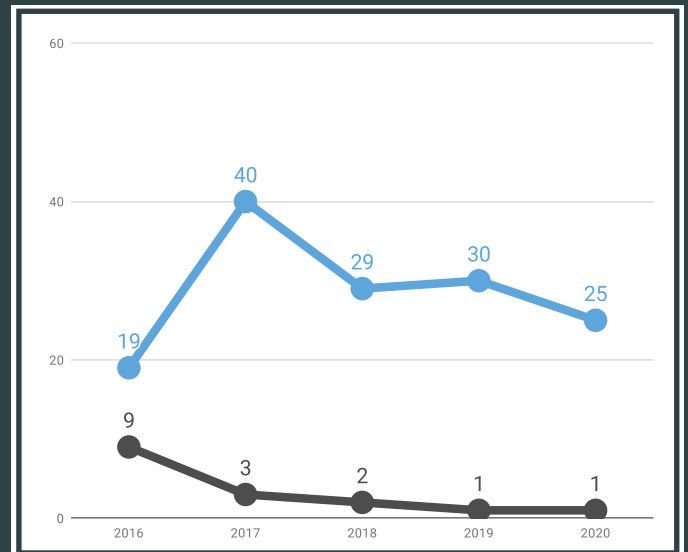
95
Candidates

127,4
Score of last
enrolled candidate

ENROLLED STUDENTS



GRADUATES' PROGRESS



2ND CYCLE

MQT



Teresa Maria Figueiredo
Passos Ramos Mota
Miranda
Director

MASTER'S IN TEXTILE CHEMISTRY

(Discontinued)

MDMPTVA



Hélder Manuel
Teixeira Carvalho
Director

MASTER'S IN DESIGN AND MARKETING OF TEXTILE PRODUCTS, APPAREL AND ACCESSORIES

MDCM



Ana Cristina Luz
Broega
Director

MASTER'S IN FASHION COMMUNICATION DESIGN

MMNT

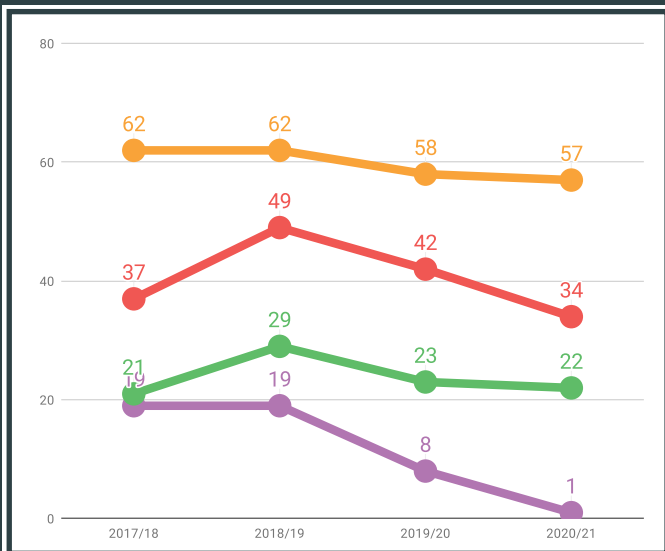


Maria Conceição
Jesus Rego Paiva
Director

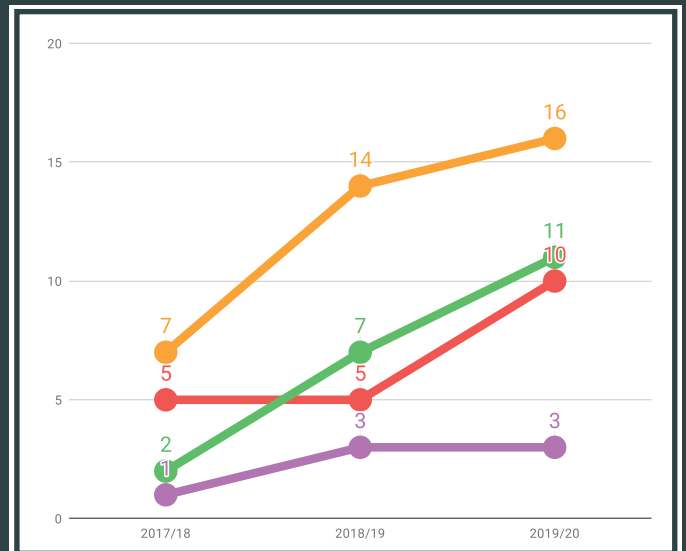
MASTER'S IN MICRO/NANO TECHNOLOGIES

Interdepartmental Education Project

ENROLLED STUDENTS



GRADUATES' PROGRESS



INTEGRATED MASTERS CYCLE DISSERTATIONS
LIST OF UP TO 10 MOST RELEVANT DISSERTATIONS

Development of flexible piezoresistive sensor for sports textile application

Student: Fernando Luís Silva Guimarães
Supervisor: Hélder Manuel Teixeira Carvalho

Physical characterization of sports socks from the point of view of comfort and compression

Student: Nelson Maciel Gonçalves Pinto
Supervisor: Maria José Araújo Marques Abreu; André Paulo Whiteman Catarino

Study of the behavior of different finishes in a shirt article

Student: Sofia Azevedo Ferreira da Cunha
Supervisor: Maria de Fátima Fernandes Esteves
Company Involved: ESTAMPARIA ADALBERTO

2ND CYCLE DISSERTATIONS

LIST OF UP TO 5 MOST RELEVANT DISSERTATIONS

Analysis of sustainable marketing practices for fashion brands: an analysis of multiple cases of leaders in the Portuguese market

Student: Ana Isabel Cibrão Costa
Supervisor: Rosa Maria de Vasconcelos

Fashion as an Art Form - Proposal for a Fashion, Art and Culture Communication Platform: "Untitled" Magazine

Student: Joana Malta Magalhães
Supervisor: Joana Malta Magalhães; Bernardo Providência Santarém

The role of physical point of sale and traditional commerce in the 19th century. XXI: Lux Boutique Case Study-Implications of the COVID-19 Pandemic in retail

Student: Margarida Rodrigues Vieira de Castro
Supervisor: Maria José Marques Abreu

Perceptions and behaviors of plus size consumers: contributions to the construction and communication of an inclusive and sustainable fashion brand

Student: Patrícia Manuela Costa Marinho
Supervisor: Ana Cristina Broega

Inflatable Textile Furniture

Student: Cátia Carina Barreira Carvalho
Supervisor: André Catarino; Bernardo Providência

Creation of a fashion accessory on sustainable leather replicas

Student: Helena Isabel Cardoso Ribeiro
Supervisor: Maria José Abreu

The role of the designer in businesses with social impact in the fashion industry

Student: Daniel Russi Frasquete
Supervisor: Graça Guedes

Design Management Allied to Entrepreneurship in the Textile Industry

Student: Sílvia Adelaide Oliveira e Silva
Supervisor: António Dinis Marques

Design factors and their influence on the perception of slow fashion

Student: Bárbara Bedendo Macena
Supervisor: Ana Cristina Broega; Nuno Oliveira Marques

DEPARTMENT OF INFORMATICS

The Department of Informatics of the University of Minho (DIUM) has as mission the dissemination of knowledge, fundamental and specialised, in the areas of science and computing technologies, with particular emphasis on Programming associated with Verification and Security, Intelligent Systems, Distributed and Reliable Systems, High-Performance Computing Systems, Software Engineering, and Communications and Computer Networks. It promotes a rigorous approach to computer problem solving based on the adoption of formal models and systematic methods of analysis and development. It fulfills its mission by teaching undergraduate, graduate and postgraduate courses -- master's and doctorate -- and carrying out research and development projects both inside and outside the University. It has a permanent staff of about 47 teachers (all with PhDs), 4+2 administrative staff, 3 technical staff and more than two dozen invited teachers to reinforce the various teaching teams. The courses it offers ensure a high level of teaching quality, demonstrated both by the large number of candidates to its formative offers and by the great and continuous demand of the students trained by DIUM from national and foreign employers. In order to create and keep current the knowledge that it teaches and applies, the research activity of its teachers is framed in several research centres. Here they explore the theory and develop projects of concretion, with the collaboration of grantees of various levels, from initiation to research to post-doctoral students. The department is managed by a director and an assistant director, who coordinate the numerous daily tasks carried out by the aforementioned technicians. The management is supported by a large team of course directors, representatives in course directorates, and student associations linked to the aforementioned training courses.

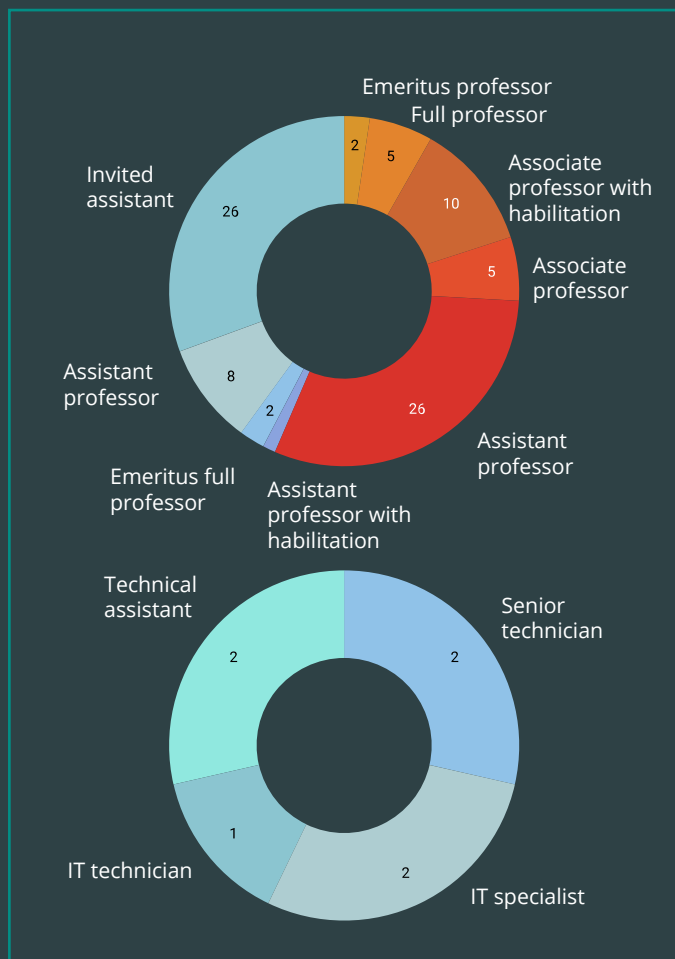


Pedro Rangel Henriques
Director



Maria Solange Pires Ferreira Rito Lima
Deputy Director

STAFF



1ST CYCLE + INTEGRATED MASTER

MIETI

TELECOMMUNICATIONS AND INFORMATICS ENGINEERING INTEGRATED MASTER'S



António Duarte Costa
Director

43 Enrolled **237** Candidates

123,8
Score of last enrolled candidate

Interdepartmental Education Project

MIEF

PHYSICS ENGINEERING INTEGRATED MASTER'S



João Pedro Alpuim
Director

37 Enrolled **231** Candidates

174,4
Score of last enrolled candidate

Interdepartmental Education Project

MIEI

INFORMATICS ENGINEERING INTEGRATED MASTER'S



António Luís Sousa
Director

181 Enrolled **1022** Candidates

171,8
Score of last enrolled candidate

MIEBiom

BIOMEDICAL ENGINEERING INTEGRATED MASTER'S



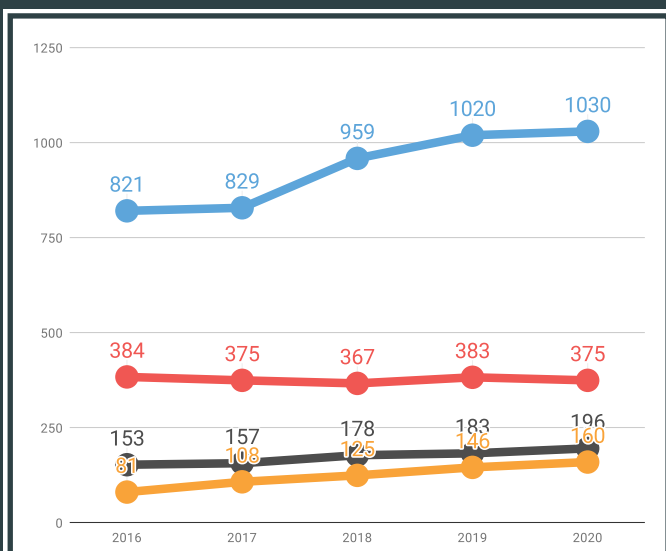
Luís António Sousa Barreiros Martins
Director

68 Enrolled **414** Candidates

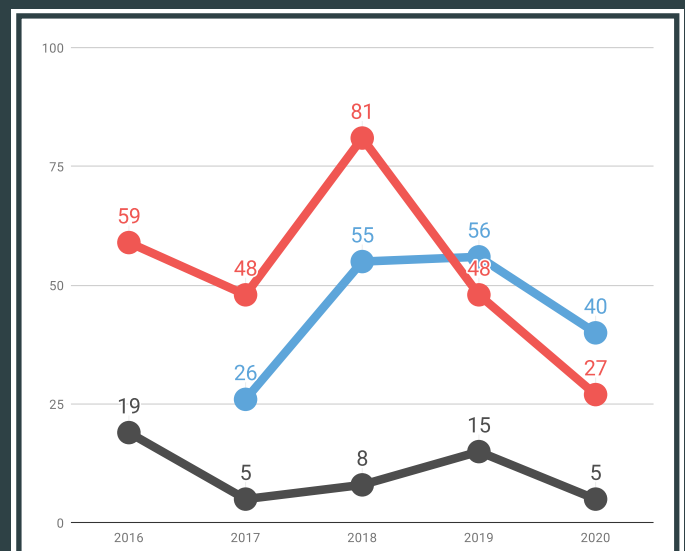
180
Score of last enrolled candidate

Interdepartmental Education Project

ENROLLED STUDENTS



GRADUATES' PROGRESS



2ND CYCLE

MERST



Alexandre Júlio
Teixeira Santos
Director

MASTER'S IN ENGINEERING OF COMPUTER NETWORKS AND TELEMATIC SERVICES

MBio



Miguel Pereira
Rocha
Director

MASTER'S IN BIOINFORMATICS

Interdepartmental Education Project

MDI



Francisco António
Carneiro Pacheco
Andrade
Director

MASTER'S IN LAW AND INFORMATICS

Taught in collaboration with:
Law School University of Minho
Interdepartmental Education Project

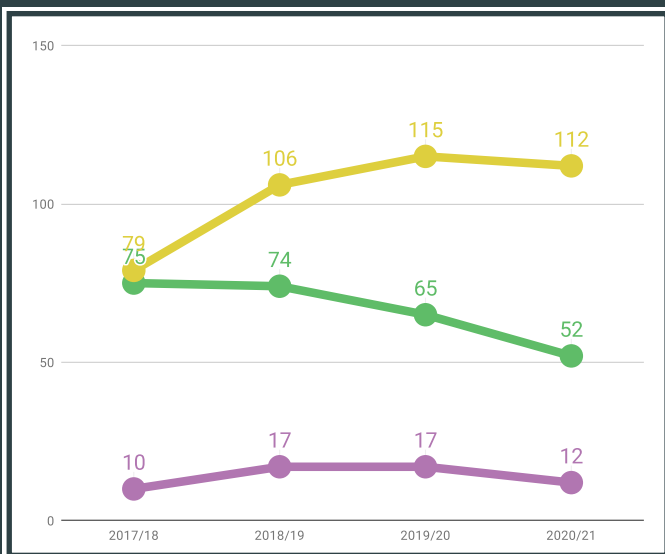
MEI



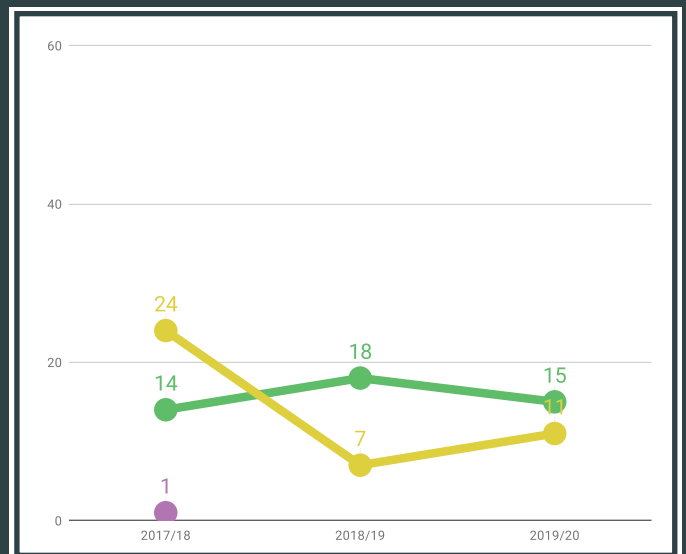
António Luís
Sousa
Director

MASTER'S IN INFORMATICS ENGINEERING

ENROLLED STUDENTS



GRADUATES' PROGRESS



INTEGRATED MASTERS CYCLE DISSERTATIONS
LIST OF UP TO 10 MOST RELEVANT DISSERTATIONS

Quantum-enhanced Reinforcement Learning

Student: André Manuel Resende Sequeira
Supervisor: Luís Paulo Santos; Luís Soares Barbosa

Desenvolvimento de um dispositivo termoeletrónico flexível para aplicação em wearables

Student: Bernardo André Pereira Azevedo
Supervisor: Eliana Maria Vieira; Luís Miguel Gonçalves

Optical sensor system for monitoring the pH of cellular media: application to an Organ-on-a-chip platform

Student: Fernando Luís Bior Mendes
Supervisor: Raquel O. Rodrigues; Stefan Gassmann

Simulation of Quantum Biology - Quantum simulation of photosynthesis

Student: José Diogo da Costa Guimarães
Supervisor: Luís Soares Barbosa

Flexible Molecular Alignment - An Industrial case study on Quantum algorithmic techniques

Student: Marta Sofia Saraiva Oliveira
Supervisor: Luís Soares Barbosa

Optical Objective Inspection of Augmented Reality Head-Up Displays (AR-HUD) for the Automotive Industry - Quantifying Projection Distance, Astigmatism, Field Curvature and Geometric Distortions of an AR-HUD Virtual Image in a Single Acquisition

Student: Moisés Alexandre da Silva Duarte
Supervisor: Eduardo Jorge Nunes Pereira; Boris Paul Jean Bret

Polarimetric LIDAR for Target Characterization - Aiming at Autonomous Driving Implementations

Student: Pedro Francisco Santos Braga Fernandes
Supervisor: Eduardo Jorge Nunes Pereira; Irene Estevez Caride

Growth and characterization of Cu(In,Ga)Se₂ thin film solar cells with a Cu-rich Cu-In-Ga target

Student: Pedro Henrique Oliveira de Melo Santos
Supervisor: Sascha Sadewasser; João Pedro Alpuim

Analysis of Message Passing Software Using Electrum

Student: Bruno Renato Fernandes Carvalho
Supervisor: Nuno Filipe Macedo; Manuel Alcino Cunha

A Machine Learning approach to Boredom Detection in Smartphones

Student: Carlos José Gomes Campos
Supervisor: César Analide Rodrigues
Company Involved: Centro Algoritmi

Predicting Problems From Telecom Installation Processes

Student: Diana Sofia Nogueira Costa
Supervisor: Hugo Daniel Peixoto; José Manuel Machado
Company Involved: NOS Comunicações

Scalable Trace Analysis of Distributed Systems Finding data races

Student: João Carlos Mendes Pereira
Supervisor: Jorge Sousa Pinto

CLAV: API de Dados e Autenticação

Student: José Carlos Lima Martins
Supervisor: José Carlos Ramalho

Automatic Parameter Tuning Using Reinforcement Learning

Student: Luís Manuel Meruje Ferreira
Supervisor: Fábio António Coelho; José Orlando Pereira

Active Learning for fraud Detection

Student: Miguel Lobo Pinto Leite
Supervisor: Paulo Jorge Azevedo
Company Involved: Feedzai

High performance data processing

Student: Nuno Filipe Pinto Faria
Supervisor: José Orlando Pereira

Roteamento Inteligente de Chamadas

Student: Sérgio Tiago Oliveira Jorge
Supervisor: Paulo Jorge Novais; Carlos Miguel Pereira
Company Involved: NOS Comunicações

2ND CYCLE DISSERTATIONS

LIST OF UP TO 5 MOST RELEVANT DISSERTATIONS

Characterizing and revealing biomarkers on patients with Cerebral Amyloid Angiopathy using Artificial Intelligence

Student: Fátima Solange Lima Rezende da Silva
Supervisor: Vítor Manuel Alves; Tiago Gil Oliveira

RealROC - A Shiny based application for ROC curve study with covariate adjustment

Student: Francisco Luís do Amaral Ribeiro Machado e Costa
Supervisor: Ana Cristina Braga

Comparação de Tecnologias de Sequenciação de DNA utilizando Genes de Sistemas Sensoriais em genomas de Aves

Student: Inês de Castro Fernandes
Supervisor: Agostinho Antunes; Miguel Pereira Rocha

Development of a Tool based on Deep Learning able to classify Biomedical Literature

Student: Nuno Miguel Caetano Alves
Supervisor: Miguel Pereira Rocha

SPARQL versus CYPHER: um estudo comparativo

Student: Ezequiel José Veloso Ferreira Moreira
Supervisor: José Carlos Ramalho

DSL para programação de teclados e acompanhamentos musicais dinâmicos

Student: Pedro Miguel Oliveira da Silva
Supervisor: José João Almeida

Um sistema P2P para deteção de anomalias de rede

Student: Ricardo César Canguero Mendonça
Supervisor: Pedro Nuno Sousa

Shopping Trends: aperfeiçoamento de um conceito para melhorar a experiência dos consumidores

Student: Sofia Dores Mendes da Silva
Supervisor: José Manuel Machado

Navegação Segura - Análise do Uso de HTTPS na Perspetiva do Utilizador

Student: Carlos Eduardo Ribeiro Machado
Supervisor: Maria Solange Lima; Paulo Martins Carvalho

Mobilidade de microserviços em centros de dados suportada por Software Defined Networking

Student: Daniel Jorge da Costa Lima de Paiva Valente
Supervisor: Pedro Nuno Sousa

Network and Cross-platform SaaS performance: a case study

Student: Joana Lourenço Carreira
Supervisor: Maria Solange Lima

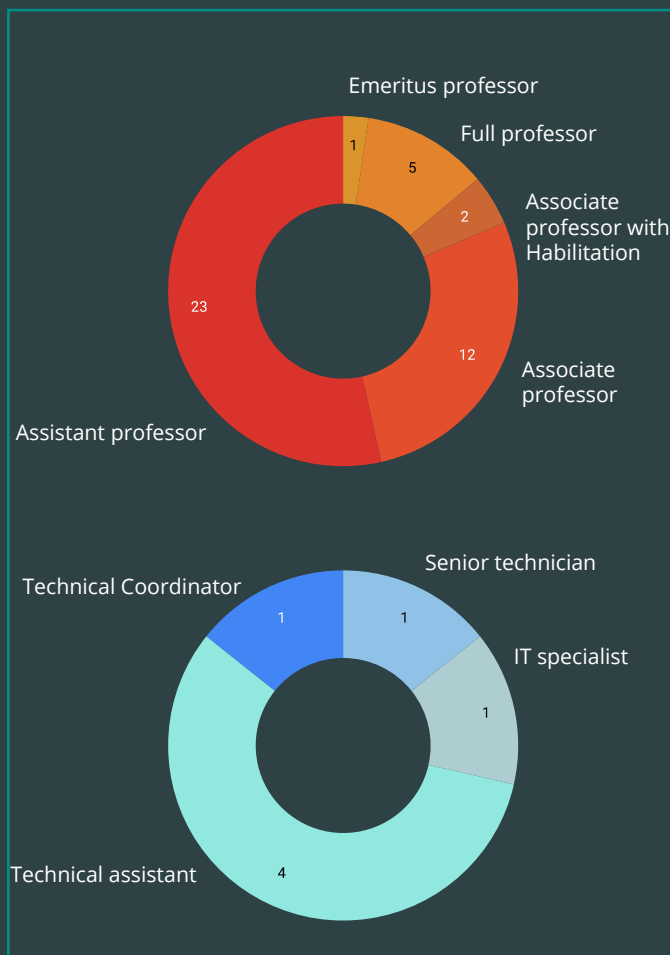
Arquiteturas e Protocolos para IoT

Student: João Marco Silva
Supervisor: Maria Solange Lima

DEPARTMENT OF PRODUCTION AND SYSTEMS

The Production and Systems Department (DPS) is an organic subunit of the School of Engineering of the University of Minho, having its origin in the Production and Systems area created in 1976. The Department's facilities are divided between the campuses of Azurém (Guimarães) and Gualtar (Braga), of the University of Minho. DPS has a highly qualified and committed PhD teaching staff that assure the quality of the teaching/ learning process. The Production and Systems Area was pioneer in the teaching of Industrial Engineering and Management in Portugal, known at the time as Production Engineering, in courses that had as main objective to train Engineers able to deal with the problems of optimisation and rationalisation of resources in small and medium size industry. The degree courses in Production Engineering were created in 1978, and the first graduates graduated over 40 years ago. The Department is currently responsible for one integrated first and second cycle teaching project, four second cycle teaching projects and integrates the board of another second cycle teaching project. At present, the DPS' mission is to generate, disseminate and apply scientific and technological knowledge in the fields of Systems Engineering and Industrial Processes and Management and Technology, thus contributing to the achievement of the mission of the School and the University of Minho. The main objective of the courses taught is to train staff, not only with technical and scientific skills in the area of Industrial Engineering and Management (production organisation, production planning and control, quality, logistics, costs, optimisation, information systems, hygiene and safety, project management, computer-assisted manufacturing, etc.), but also with transversal skills (team work, leadership, conflict management, communication, etc.), capable of guaranteeing a competitive performance for the productive systems of the companies where they are inserted.

STAFF



Maria Sameiro Faria Brandão Soares Carvalho
Director



Paula Fernanda Varandas Ferreira
Deputy Director

EVENTS

- SHO 2020 - Symposium on Occupational, Safety and Hygiene (virtual event)
- "A Medicina do Trabalho e a Pandemia" - Dr. Henrique Machado
- "A importância de prevenir acidentes de trabalho: estudo de caso" - Dr. Rui Garrido
- A gestão da Propriedade Intelectual e a inovação
- Engenharia Industrial no sector aeronáutico
- Melhoria Contínua no Grupo SONAE
- As ferramentas de Engenharia Industrial na Indústria Automóvel
- 2020 Engineering Systems Day
- International Conference on Quality Engineering and Management
- Jornadas de Engenharia e Gestão Industrial 20

EVENTS

- EGI Talks
 - Student Welcome Session 1º year
 - 9th International Conference on BUSINESS SUSTAINABILITY 2020
 - 8th International Conference on Virtual and Networked Organizations Emergent Technologies and Tools - ViNOrg'20
 - PAEE/ALE'2020 - International Conference on Engineering Education
 - COMPETIND 4.0
 - Project Management Workshop 2020
 - CompetInd4.0 2020 (Organized within the scope of the UC
- Project Management Skills Development of the Master in Engineering Project Management)
 - TOP#03 - Project Cost and Time Control Tools
 - TOP#07 - Agile Project / Product Management with Scrum and Kanban
 - TOP#08 - Hybrid Project Management
 - TOP#09 - The Future of Project Management - The Quiet Revolution under the new ISO standards
 - Computational and Applied Statistics
 - DPS Day _Engineering to Project the Future

1ST CYCLE + INTEGRATED MASTER

MIEGI

INDUSTRIAL MANAGEMENT AND ENGINEERING INTEGRATED MASTER'S



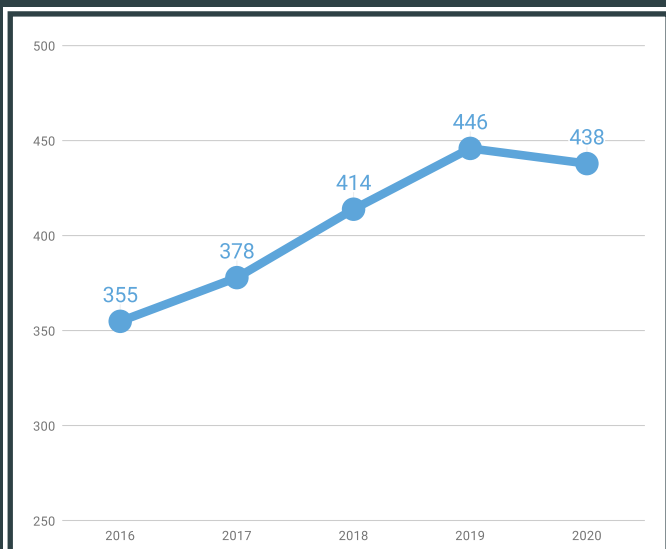
Paulo Alexandre Costa
Araújo Sampaio
Director

59
Enrolled

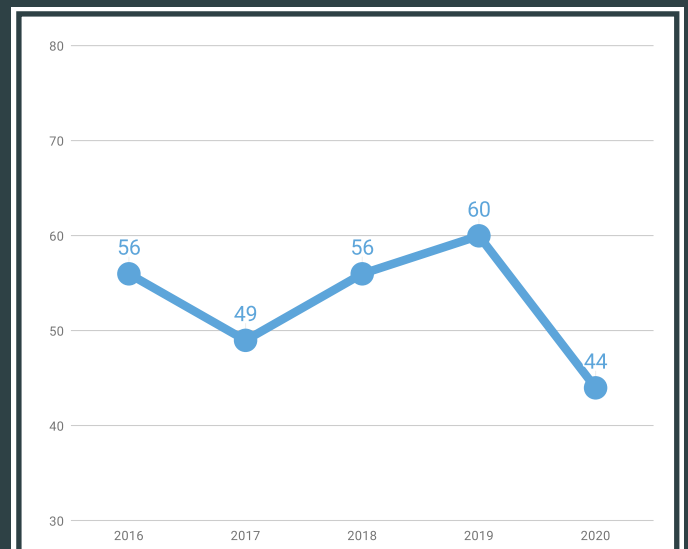
456
Candidates

181,6
Score of last
enrolled candidate

ENROLLED STUDENTS



GRADUATES' PROGRESS



2ND CYCLE

MSI



MASTER'S IN INFORMATION SYSTEMS

Paulo Sérgio Lima
Pereira Afonso
Director

MEH



MASTER'S IN HUMAN ENGINEERING

Paula Machado
Sousa Carneiro
Director

MEI



MASTER'S IN INDUSTRIAL ENGINEERING

Jorge Miguel
Oliveira Sá Cunha
Director

MEGQ



MASTER'S IN ENGINEERING AND QUALITY MANAGEMENT

Cristina Maria
Santos Rodrigues
Director

MGPE

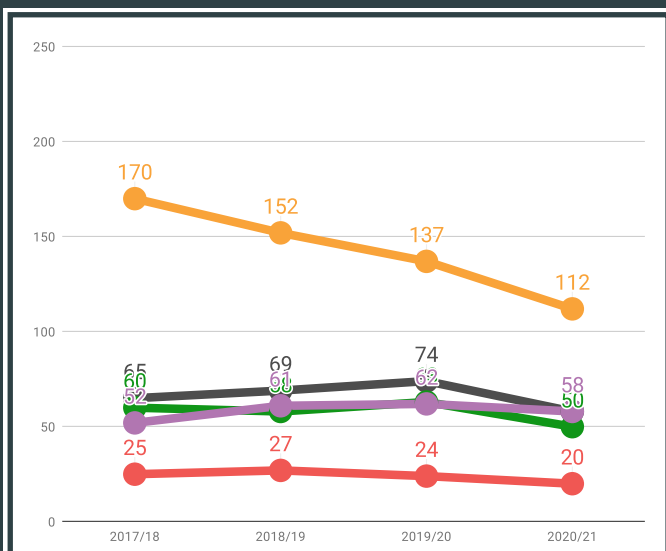


MASTER'S IN ENGINEERING PROJECT MANAGEMENT

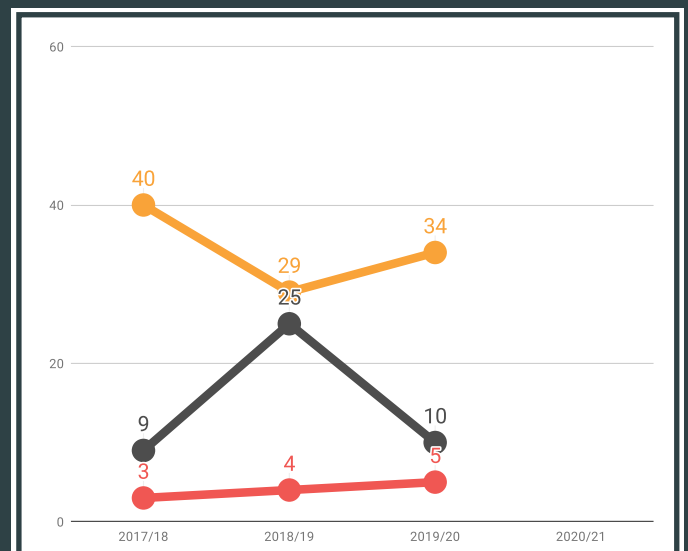
Anabela Pereira
Tereso
Director

Interdepartmental Education Project

ENROLLED STUDENTS



GRADUATES' PROGRESS



INTEGRATED MASTERS CYCLE DISSERTATIONS
LIST OF UP TO 10 MOST RELEVANT DISSERTATIONS

Melhoria de desempenho de um setor de acabamentos mecânicos numa indústria de cortiça

Student: Ana Lúcia Soares da Silva
Supervisor: Rui Manuel Alves Silva Sousa
Company Involved: Amorim & Amorim, S.A.

Melhoria de uma linha de produção aplicando princípios Lean Thinking numa empresa de componentes para a indústria do ramo automóvel

Student: Ana Soraia Esteves Fiúza
Supervisor: Anabela Carvalho Alves
Company Involved: BorgWarner Emissions, Thermal and Turbo Systems

Informatização do Processo de Planeamento e Controlo da Produção

Student: Carlos Manuel Oliveira da Silva
Supervisor: Rui Manuel Sá Pereira Lima
Company Involved: Belisotex

Mineração de Processos e Lean Seis Sigma: Metodologia Combinada para Melhorar o Processo de Compras de um Hospital

Student: Francisco da Silva Ramires
Supervisor: Paulo Alexandre da Costa Araújo Sampaio
Company Involved: Medtronic Portugal, Lda.

Aplicação Combinada de Ferramentas Lean e de Ergonomia na Melhoria do Desempenho dos Postos de Trabalho numa Empresa de Capas de Assento para a Indústria Automóvel

Student: José Nuno Gonçalves da Costa
Supervisor: Ana Sofia de Pinho Colim
Company Involved: Coindu, S.A.

Tecnologia Derivada da Internet das Coisas (IoT): Análise de Produto da disseminação de dados para comunicação Veículo-para-Veículo (V2V) tolerante a atrasos para uma startup de veículos conectados

Student: Mariana Sampaio Osório Costa Martins
Supervisor: Paulo Alexandre da Costa Araújo Sampaio
Company Involved: Veniam

Reconfiguração de uma linha de produção usando princípios Lean Thinking numa empresa de componentes para a indústria automóvel.

Student: Nuno Miguel Moreno Teixeira Bastos
Supervisor: Anabela Carvalho Alves
Company Involved: AptivPort Systems

Impacto na produção de células de robótica colaborativa em postos de operação manual

Student: Rita Martins Morgado
Supervisor: Ana Sofia de Pinho Colim; José Dinis Araújo Carvalho
Company Involved: Ikea Industry Portugal, S.A.

Melhoria dos processos de montagem de componentes eletrónicos aplicando Lean Six Sigma e TRIZ numa empresa de componentes para a indústria automóvel

Student: Sónia da Silva Araújo
Supervisor: Anabela Carvalho Alves
Company Involved: Bosch Car Multimédia

Desenvolvimento de um Sistema de Custeio e Ficha de Custo do Produto numa Empresa de Têxteis Técnicos

Student: Vera Lúcia Vilas Boas Mendes
Supervisor: Paulo Sérgio Lima Pereira Afonso; Maria do Sameiro Faria Brandão Soares de Carvalho
Company Involved: SONICARLA Europa Têxteis, S.A.

2ND CYCLE DISSERTATIONS

LIST OF UP TO 5 MOST RELEVANT DISSERTATIONS

Avaliação da Cultura de Segurança dos alunos do 1º ano das licenciaturas e do 1º ano dos mestrados integrados de uma universidade pública portuguesa

Student: Paulo César Anacleto Filho

Supervisor: Néilson Bruno Martins Marques Costa

A importância da sensibilização e da informação para a melhoria da percepção real do risco

Student: Daniela Filipa Freitas da Costa

Supervisor: Susana Raquel Pinto da Costa

Otimização do processo de aquisição de dados de controle estatístico de processo em uma empresa do Polo Industrial de Manaus

Student: Diogo Ewerton Brasil Costa

Supervisor: Maria Leonilde Rocha Varela

Gestão de Riscos em Programas e Projetos de I&D em Colaboração Universidade-Indústria: uma perspetiva de stakeholders

Student: Joana Ferreira Domingues

Supervisor: Anabela Pereira Tereso

Aplicação do Método AHP na Seleção de Subcontratados

Student: Ana Sofia Mesquita Fernandes

Supervisor: Manuel José Lopes Nunes

Projeto e implementação de uma nova linha de produção de autorrádios

Student: Cátia Daniela Correia Cruz

Supervisor: José Dinis de Araújo Carvalho

Melhoria dos Processos Logísticos e das Condições de Trabalho Usando Princípios do Lean Thinking numa Empresa de Componentes Metálicos para Automóveis

Student: Tiago Emanuel Vinagre Afonso

Supervisor: Anabela Carvalho Alves

Aplicação do Particle Swarm Optimization a um problema de escalonamento de máquinas paralelas não relacionadas com tempos de setup dependentes da sequência

Student: Ana Sofia Alves Ferreira

Supervisor: Maria Leonilde Varela; Ana Cristina Braga

A Machine Learning Approach to Environmental Sustainability

Student: Carolina Oliveira da Silva

Supervisor: Paulo Novais; Bruno Fernandes

Desenvolvimento de Algoritmos para Recolha de Produtos num Armazém Automático de Alta Densidade

Student: Daniel Oliveira Sousa

Supervisor: José António Vasconcelos Oliveira

Análise de um meta-modelo de escalonamento da produção para problemas em ambientes orientados ao produto

Student: João Davide Barbosa Martins

Supervisor: Maria Leonilde Varela; Bruno Gonçalves

Hybrid Project Management Solutions for Project Management of a Geographically Distributed Team in an Industrial Company

Student: Catarina Isabel da Cunha Ribeiro de Bragança Milheiro

Supervisor: Rui Manuel de Sá Pereira de Lima; Leandro Ferreira Pereira

Company Involved: Bosch Car Multimedia

Desenvolvimento de Competências de Comunicação Pessoal em Gestão de Projetos através de Aprendizagem Baseada em Cenários

Student: Elisa Cristina Lameira Tinoco

Supervisor: Rui Manuel de Sá Pereira de Lima; Diana Isabel de Araújo Mesquita

Melhorias das Práticas de Gestão de Projetos numa Empresa de Gestão Ambiental

Student: Wilson Isaac Manuel Andre

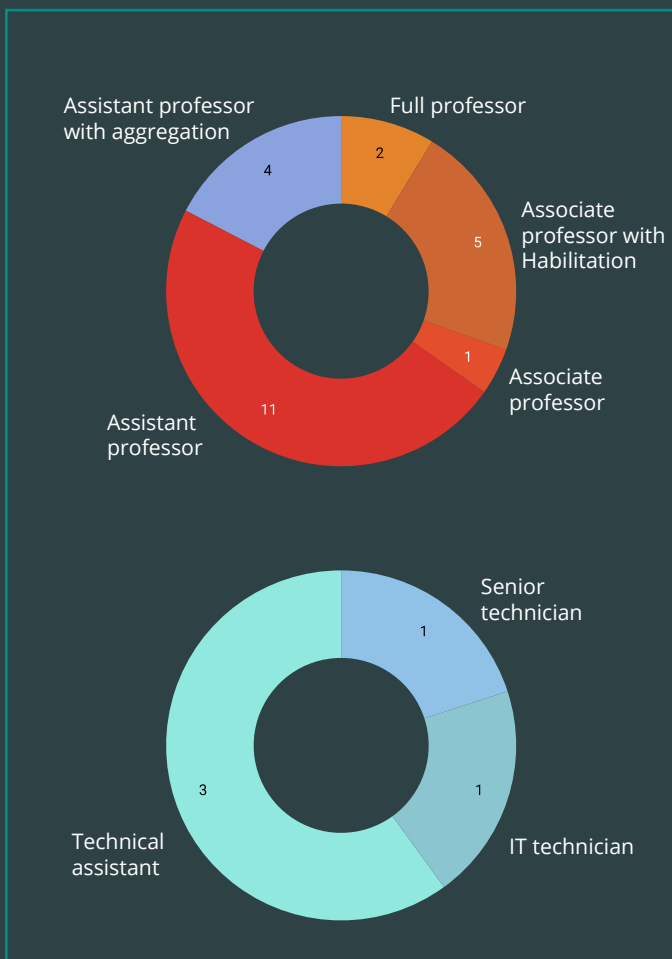
Supervisor: Paula Fernanda Varandas Ferreira

Company Involved: Ecofirma

DEPARTMENT OF INFORMATION SYSTEMS

The Department of Information Systems is associated with the scientific area of Information Systems and Technologies (information systems and technologies), an area that also appears internationally with the designations of Information Systems (information systems) or Management Information Systems (management information systems)... The Department of Information Systems brings together teachers and researchers whose skills and interests in teaching and R&D are strongly related to those challenges. The department's essential role is to combine skills in the creation of artifacts based on information technologies with skills resulting from the understanding of human and social phenomena associated with the adoption and exploitation of such artifacts and the use of information. Special attention is paid to organisations (companies and other institutions, public or private), as particularly relevant spaces where such phenomena occur. It is committed to a rigorous approach to solving problems in the area of information systems based on the adoption of formal models and systematic methods of analysis and development. The courses it offers ensure a high quality level of education, demonstrated both by the large number of candidates to its training offers and by the large and continued demand from domestic and foreign employers for ISD graduates. Research and development (R&D) activity related to technologies and information systems, implies the combination of typical approaches to technological development with approaches to social science research. On the other hand, systemic thinking is seen as an appropriate approach to deal with the inherent complexity of 'things' and 'phenomena' considered interesting. Thus, this type of approach is used in the analysis, understanding and redefinition of human activity situations and also in the analysis, design and construction of computer-based artifacts (applications of information and communication technologies) used or to be used in those situations.

STAFF



João Álvaro Brandão
Soares Carvalho
Director



Helena Cristina Coutinho
Duarte Rodrigues
Deputy Director



Isabel Maria Pinto Ramos
Deputy Director



Pedro Sérgio Oliveira
Branco
Deputy Director

1ST CYCLE + INTEGRATED MASTER

MIEGSI

ENGINEERING AND MANAGEMENT OF INFORMATION SYSTEM INTEGRATED MASTER'S



Miguel António Sousa
Abrunhosa Brito
Director

150
Enrolled

604
Candidates

145,2
Score of last
enrolled candidate

MIEGSI (PL)

ENGINEERING AND MANAGEMENT OF INFORMATION SYSTEM INTEGRATED MASTER'S (AFTER WORKING HOURS)



Miguel António Sousa
Abrunhosa Brito
Director

MIETI

TELECOMMUNICATIONS AND INFORMATICS ENGINEERING INTEGRATED MASTER'S



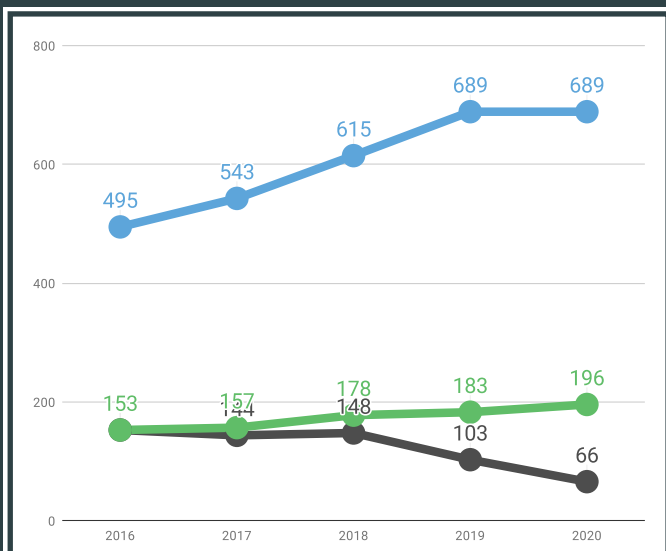
António Luís Duarte
Costa
Director

43
Enrolled

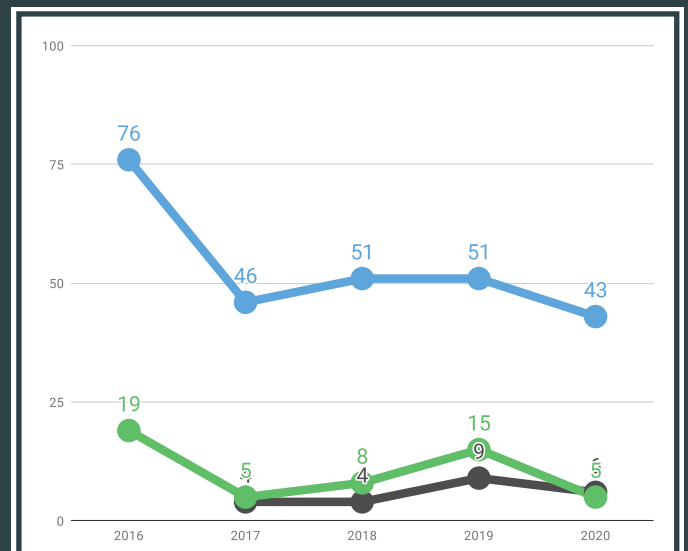
237
Candidates

123,8
Score of last
enrolled candidate

ENROLLED STUDENTS



GRADUATES' PROGRESS



2ND CYCLE

MSI



Ana Alice Rodrigues
Batista
Director

MASTER'S IN INFORMATION SYSTEMS

MTI



Luís Gonzaga
Mendes Magalhães
Director

MASTER'S IN INTERACTIVE TECHNOLOGIES

MGPE

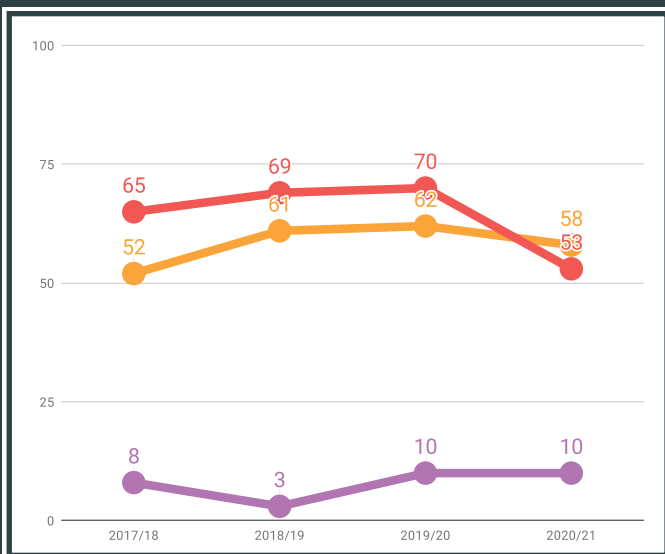


Anabela Pereira
Tereso
Director

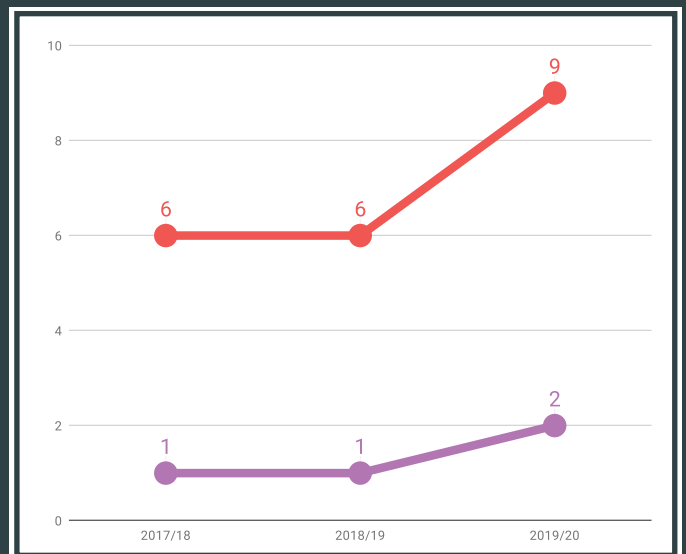
MASTER'S IN ENGINEERING PROJECT MANAGEMENT

Interdepartmental Education Project

ENROLLED STUDENTS



GRADUATES' PROGRESS



INTEGRATED MASTERS CYCLE DISSERTATIONS
LIST OF UP TO 10 MOST RELEVANT DISSERTATIONS

Agills: Study of an Agile Information Systems Process

Student: Ana Beatriz Cruz Meneses
Supervisor: João Eduardo Varajão

Big Genome Warehouse: Integração de Dados Biológicos Heterogêneos para a Medicina Personalizada

Student: André Francisco Oliveira Leite
Supervisor: Maribel Yasmina Santos; Carlos Filipe Machado Silva Costa

Benchmarking Business Analytics Techniques in Big Data

Student: Cátia Cristina Pereira de Oliveira
Supervisor: Manuel Filipe Santos; Carlos Filipe da Silva Portela

Maturity Model for Collaborative R&D University-Industry Sustainable Partnerships

Student: Cláudia Maria Pinheiro da Silva
Supervisor: Pedro Miguel Abreu Ribeiro

Ethics and deontology in the area of Information Systems and Technology

Student: Diana Maria Martins Ribeiro
Supervisor: João Eduardo Varajão

Field Force Management Resource Utilization Forecast

Student: Hugo Esteves de Castro
Supervisor: Miguel Abrunhosa de Brito

Adaptive Business Intelligence: Forecasting and Optimization Models in Healthcare

Student: João António Araújo Lopes
Supervisor: Manuel Filipe Santos; José Machado

AI-driven Dynamic Scoring Feature for Fujitsu Loss Prevention Platform

Student: João Pedro Ribeiro Oliveira
Supervisor: Rui Manuel Dinis dos Santos

Success Factors in Information Systems and Technology Projects

Student: Nuno Miguel Monteiro da Silva Pinheiro
Supervisor: João Eduardo Varajão

Unit Tests Integration in the Software Test Policy

Student: Pedro Henrique da Silva Alves
Supervisor: Miguel Abrunhosa de Brito

A Reference Design for Sensible Bicycles

Student: Ricardo João dos Santos Pina Cabral
Supervisor: Rui João José

Integration of Static Tests of Static Test in the Software test Policy

Student: César Daniel Fernandes Rodrigues
Supervisor: Manuel Filipe Santos; Carlos Filipe da Silva Portela

Data Mining for Predicting Cardiovascular Predictive Failures

Student: Francisco Daniel Silva ferreira de Freitas
Supervisor: Manuel Filipe Santos

Desmaterialização do processo de pedidos de orçamento

Student: João Luís Lobo da Silva
Supervisor: Ana Alice Baptista

2ND CYCLE DISSERTATIONS

LIST OF UP TO 5 MOST RELEVANT DISSERTATIONS

Evaluation of the Transforming Potential of Emerging Technologies

Student: Isabel Maria Pinto Ramos
Supervisor: Ângela Fernandes Gil

Internet Of Things, Smart City, Emotion, Environment

Student: Catarina Filipa Diz Marcelo
Supervisor: Henrique Santos

Issues and Concerns of IS responsible persons in the context of the NHS hospital

Student: Catarina Marques de Oliveira Pontes
Supervisor: José Carlos Nascimento e Silva

Agile MIP: agile method for IT implantation

Student: Juliana Sofia Cardoso Soares
Supervisor: João Varajão

Information Systems Security Governance Evaluation in the Portuguese Local Public Administration

Student: Melise Ribeiro Cavallare
Supervisor: José Filipe de Sá Rodrigues Soares

Forecasting trends in the fashion industry

Student: Paulo Jorge Dias Fernandes
Supervisor: Jorge Vaz Oliveira Sá; Carlos Filipe da Silva Portela

Study at the Public works department in Malaysia

Student: Paulo Maciel da Silva
Supervisor: João Álvaro Carvalho

DEPARTMENT OF MECHANICAL ENGINEERING

The Mechanical Engineering Department is a structural sub-unit of the School of Engineering of the University of Minho. Its mission is the development of the main areas of Mechanical Engineering through three vectors: graduate and post-graduate teaching, research and development, partnerships with industry. Its main teaching project is the Integrated Master in Mechanical Engineering which represents approximately 60% of the teaching activity of DEM. It also participates in other relevant projects such as the Integrated Masters in Biomedical Engineering and Materials Engineering. All these projects are structured according to the Bologna Protocol. The DEM is associated with 3 subject areas: Thermofluidics and Energy Technologies; Design, Automation and Mechanical Technology; Metallurgy and Materials Mechanics. The research activities are framed in the METRICS and CMEMS research centres. The Department collaborates actively with the CVR - Centre for the Valorisation of Waste (the President of the Board of Directors is a professor at DEM - Prof. Cândida Vilarinho) and with TecMinho, hosting and directing the Chemical Analysis Laboratory of the latter institution.

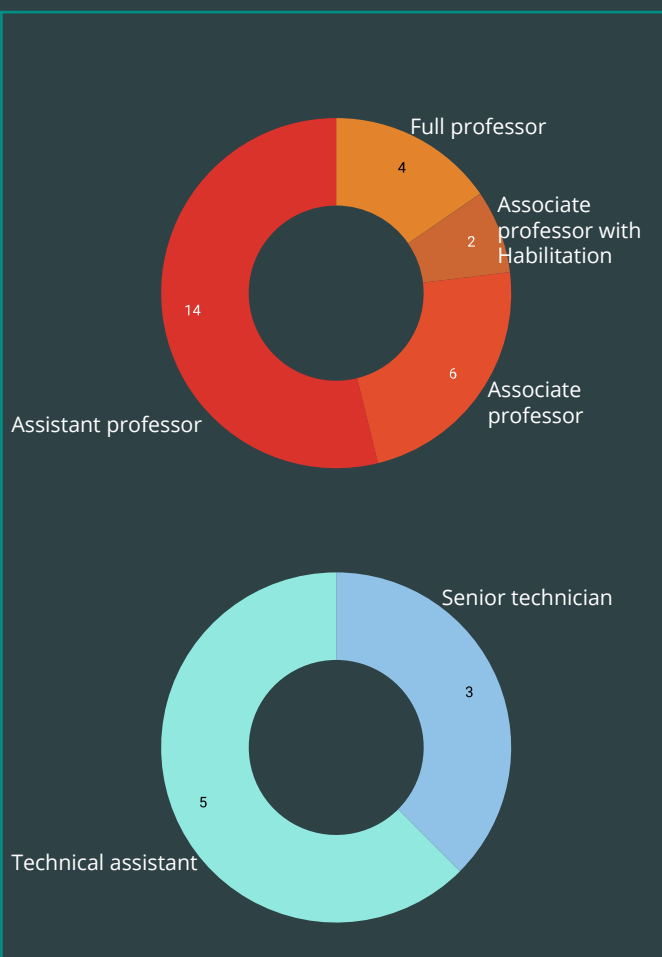


José Carlos Teixeira
Director



Delfim Soares
Deputy Director

STAFF



EVENTS

- Jornadas Técnicas 2020
- Materiais Avançados para a Defesa: Oportunidades 2030
- A (re)emergência das Fibras Naturais
- Biopolímeros: os novos Desafios e Oportunidades
- Fibrenamics Impulse #AtHome - (Re)Pensar o Futuro
- Nano Funcionalização de Materiais Fibrosos
- Materiais Fibrosos Avançados
- Shaping the Future with Sustainable Materials – Opportunities after the Pandemic
- Materiais Ativos para Sensorização
- AuxDefense2020 - 2nd World Conference on Advanced Materials for Defense
- Design Circular de Produtos
- Novos Desafios da Arquitetura
- Mobilidade Sustentável
- Materiais Inteligentes para Smart Cities
- Casos de Estudo da Economia Circular
- Kick Off proj mobilizador PRODUTECH 4S&C - PPS4 – Cadeia Digital do Fornecimento em Contexto Circular
- “STITCHED Innovative Stapling Solutions ACCO Brands (P2020 - no 38397) - Knowledge Based Manufacturing: stapling the future’s staplers”

1ST CYCLE + INTEGRATED MASTER

MIEMEC

MECHANICAL ENGINEERING INTEGRATED MASTER'S



Nuno Miguel
Magalhães Dourado
Director

87
Enrolled

575
Candidates

170,8
Score of last
enrolled candidate

Interdepartmental Education Project

MIEBiom

BIOMEDICAL ENGINEERING INTEGRATED MASTER'S



Luís António Sousa
Barreiros Martins
Director

68
Enrolled

414
Candidates

180
Score of last
enrolled candidate

Interdepartmental Education Project

MIEMAT

MATERIALS ENGINEERING INTEGRATED MASTER'S



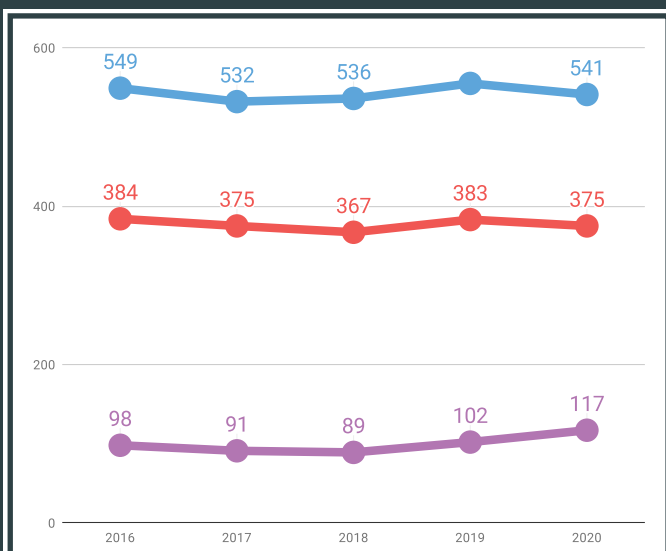
Maria Cândida Lobo
Guerra Vilarinho
Director

29
Enrolled

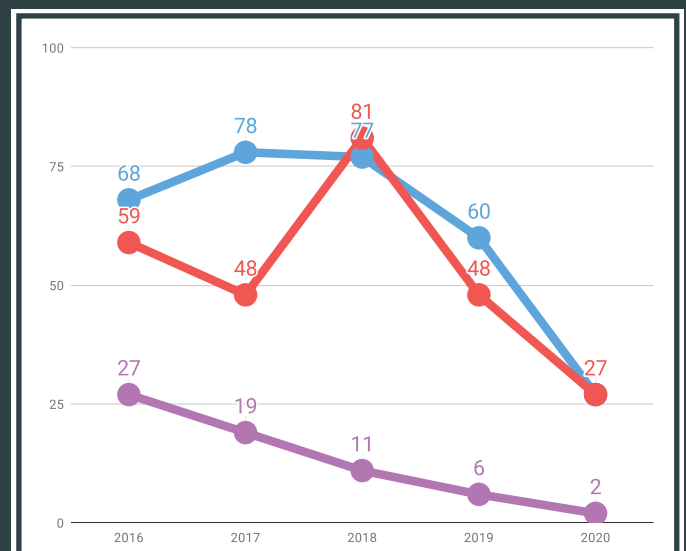
170
Candidates

154,6
Score of last
enrolled candidate

ENROLLED STUDENTS



GRADUATES' PROGRESS



2ND CYCLE

MEP



MASTER'S IN PRODUCT ENGINEERING

António José Vilela Pontes
Director

Interdepartmental Education Project

MEM



MASTER'S IN MECHATRONICS ENGINEERING

António Alberto Caetano Monteiro
Director

MMNT



MASTER'S IN MICRO/NANO TECHNOLOGIES

Maria Conceição Jesus Rego Paiva
Director

Interdepartmental Education Project

MGA

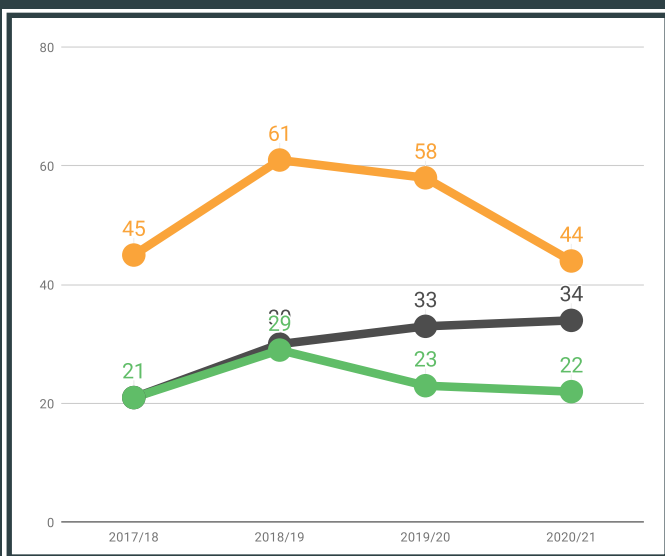


MASTER'S IN ENVIRONMENTAL MANAGEMENT

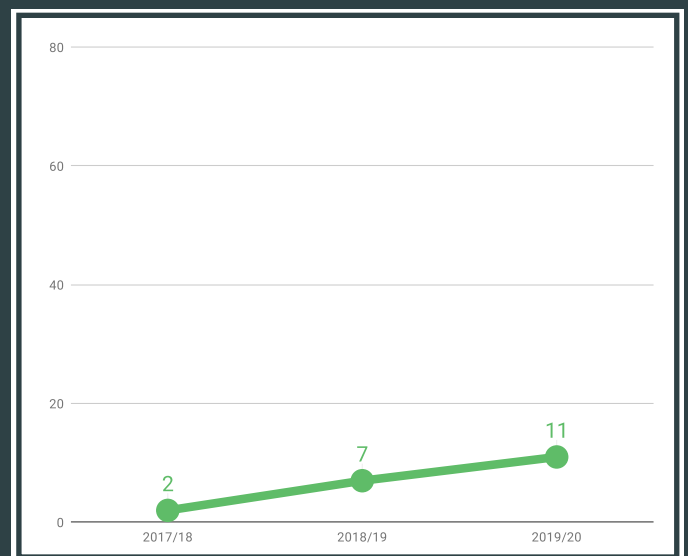
Maria Olívia Baptista Oliveira Pereira
Director

Interdepartmental Education Project

ENROLLED STUDENTS



GRADUATES' PROGRESS



INTEGRATED MASTERS CYCLE DISSERTATIONS

LIST OF UP TO 10 MOST RELEVANT DISSERTATIONS

Mechanical Performance and Footprint of Industrial Tires on Plastic Soils: Modelling and Numerical Simulation

Student: Ana Margarida de Carvalho Cascão Mações
Supervisor: José Luís Carvalho Martins Alves
Company Involved: Continental Mabor

Pool boiling of nanofluids using biphilic surfaces

Student: Eduardo Jorge Pereira de Freitas
Supervisor: Rui Alberto Madeira Macedo Lima

Estudo da intermutabilidade de componentes - injetados em cavidades múltiplas - num sistema mecatrónico aplicado nos automóveis BMW

Student: Pedro Ferreira Lopes
Supervisor: José Luís Carvalho Martins Alves

Sequenciamento de Análise Técnica Complexa para Comunicação Eficaz com Audiência Não-técnica e Técnica

Student: Diogo do Paço Ramos
Supervisor: José Mendes Machado

Análise acústica de unidades de tratamento do ar

Student: Wilson Loureiro Alves
Supervisor: José Filipe Bizarro Meireles; José Carlos Fernandes Teixeira

Estudo, desenvolvimento e validação de um sistema de beading e descalçar total para a produção de luvas de látex

Student: Hélder José Seara Laranjeira
Supervisor: Eurico Augusto Rodrigues Seabra

Development of numerical modelling codes capable of simulating the extrusion of aluminum profiles

Student: António Pedro Gonçalves Oliveira
Supervisor: Hélder Jesus Fernandes Puga; João Miguel Nóbrega

Study of Phase Separated Food-inks by Oral Tribology Assessment and Molecular Dynamics

Student: Mariana Araújo Pires
Supervisor: Cristiano Simões de Abreu; Sara Maria Marques Oliveira

Integrative study on the development of microparticles for oral drug delivery: processing and characterization through biotribology and molecular dynamics analysis

Student: Catarina Alexandra Fortuna dos Santos Miranda
Supervisor: Cristiano Simões de Abreu; Isabel Rodríguez Amado

Numerical and experimental hemodynamic studies of stenotic coronary arteries

Student: Violeta Meneses Carvalho
Supervisor: Senhorinha Fátima Capela Fortunas Teixeira; Rui Alberto Madeira Macedo Lima
Company Involved: BIOFABICS, LDA

Development of Advanced Components for the fabrication using Additive Manufacturing

Student: Afonso Luís Pimenta Machado
Supervisor: João Pedro Mendonça; Bernardo Ribeiro
Company Involved: CEIIA

2ND CYCLE DISSERTATIONS

LIST OF UP TO 5 MOST RELEVANT DISSERTATIONS

Using information management as a support for the industrial equipment design

Student: Francisco Arnaldo Regêncio
Supervisor: João Pedro Mendonça

Development of new personal protective equipment (masks) based on membranes produced by electrospinning for active filtration of microorganisms

Student: Maria Luísa Machado Pacheco
Supervisor: Raul Fangeiro; Diana Ferreira

Passive microfluidic system for separation of healthy and infected malaria red blood cells

Student: Renata de Oliveira Diehl
Supervisor: Rui Alberto Madeira Macedo de Lima; Susana Catarino

Multiplexer microfluidic system for mixing and transporting salivary samples

Student: Filipe Maurício dos Santos Ferreira
Supervisor: Rui Alberto Madeira Macedo de Lima; Susana Catarino

Development of a test bench to optimize the operation of a generator for micro wind

Student: João Manuel da Rocha Queirós
Supervisor: António Alberto Caetano Monteiro; João Luiz Afonso
Company Involved: UMinho

Analysis and Improvement of a Productive Process in the Automotive Industry: Automatic Optical Inspection Systems and Analysis of Failure and Effect Modes

Student: Pedro Manuel Pinto Ribeiro
Supervisor: João Pedro Mendonça
Company Involved: Bosch Car Multimedia

Study and design of a structured light measurement system.

Student: Rúben André Salgado Pereira
Supervisor: João Pedro Mendonça
Company Involved: UMinho

CENTRE OF BIOLOGICAL ENGINEERING



Maria Madalena Santos Alves
Director

The Centre of Biological Engineering (CEB in a PT acronym) is a Research Unit of UMinho created 25 years ago, being recognised as a National reference Research Unit on Biotechnology and Bioengineering (B&B). Since 2002, CEB was awarded by FCT with the grade of Excellent.

CEB combines key expertise in fundamental science with engineering sciences, covering the molecular, cellular and process scales, to obtain value-added products or processes in the Food, Chemical, Biotech, Biomedical, Environmental and Agricultural sectors. With the motto "Linking life and technology to shape the future", CEB is a unit aiming to be a strategic infrastructure for the development of R&D and innovation policies in 4 interdisciplinary thematic areas.

Industrial B&B - employing microorganisms as biocatalysts and industrial by-products and wastes as secondary raw materials.

Food B&B - enhancing the functionality, quality, safety and nutritional value of food, together with the integration of advanced technologies into food production.

Environmental B&B - remediation of contaminated environments and valorisation of recalcitrant and bio-waste materials by converting them into liquid and gaseous bioenergy carriers, bioelectricity, bulk chemicals or new catalysts.

Health B&B - biofilm science, virulence of pathogenic fungi, bioactive peptides/proteins, biomaterials and polymers for drug delivery and regenerative medicine and systems and synthetic biology approaches.

The 2nd level of organisation is implemented through 9 research groups: AMG- Applied Mycology; B.Factory – Molecular Biotechnology, Bioreactors, Biofuels and Food; BIOFILM Science & Technology; BIOSYSTEMS - Bioprocess Engineering & Computational Biosystems; BRIDGE - Bioresources, Bioremediation & Biorefinery; BBRG - Bioprocess & Bionanotechnology; FUNCARB- Functional Carbohydrates, FIT – Food Innovation and Technology; and BIOMARK -Biosensors Research.

The CEB research impact into industry, with translation of technology into the market, is also a driving force for CEB researchers and this has been accomplished through R&D projects in industrial consortia and launching of more than 14 spin-offs.



Lúcia Raquel Marona Rodrigues
Vice-director



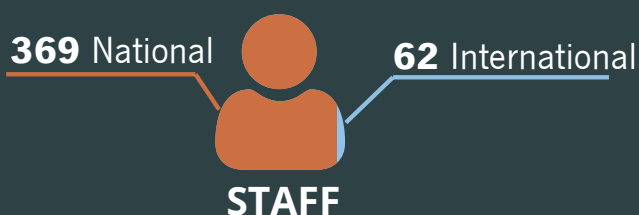
Lucília Maria Alves Ribeiro Domingues
Vice-director



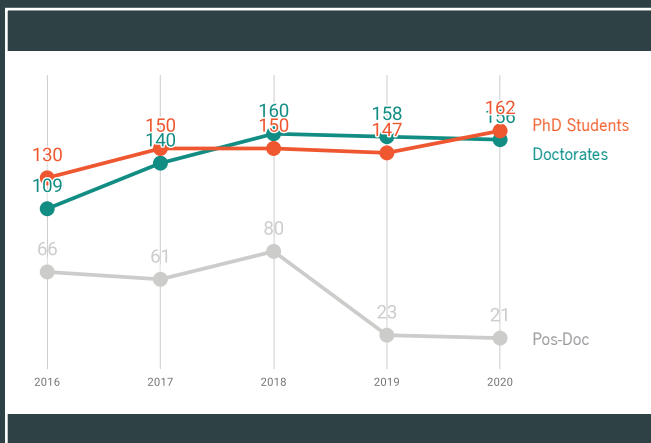
Nuno Cerca
Vice-director



PHD FULL MEMBERS



PHD EVOLUTION



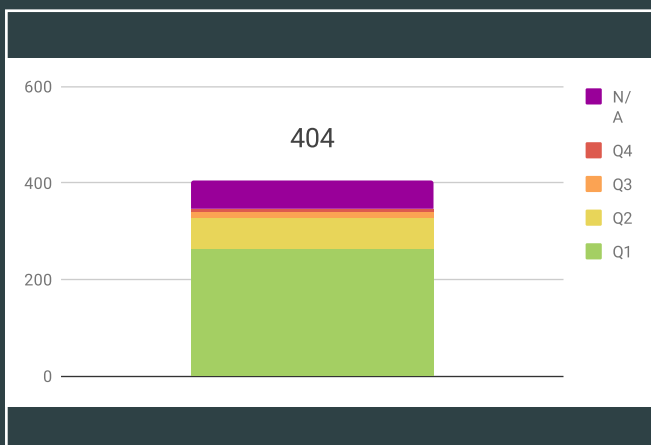
13 Completed



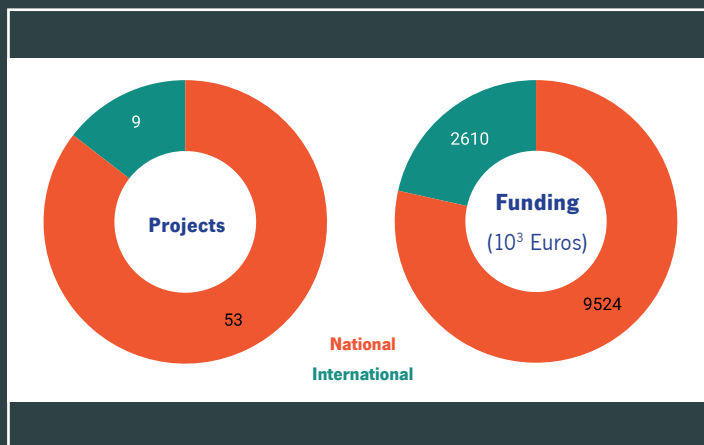
156 On-going

PHD THESIS

NO. OF PUBLICATIONS IN INDEXED JOURNALS



RESEARCH PROJECTS AND FUNDING



FLAGSHIP PUBLICATIONS

Multiple and flexible roles of facultative anaerobic bacteria in microaerophilic oleate degradation

Duarte, M. Salomé; Salvador, Andreia F.; Cavaleiro, Ana Júlia; Stams, Alfons J.M.; Pereira, M. Alcina; Alves, M. Madalena
Environmental Microbiology, 22(9), 3650-3659, 2020

A dry and fully dispersible bacterial cellulose formulation as a stabilizer for oil-in-water emulsions

Martins, Daniela; Estevinho, B.; Rocha, F.; Dourado, Fernando; Gama, Miguel
Carbohydrate Polymers, 230(115657), 2020

Paper-based platform with an in situ molecularly imprinted polymer for β -amyloid

Pereira, Marta V.; Marques, Ana C.; Oliveira, Daniela; Martins, Rodrigo; Moreira, Felismina T.C.; Sales, M. Goreti F.; Fortunato, Elvira
ACS Omega, 5(21), 12057-12066, 2020

Valorization of seaweed carbohydrates: autohydrolysis as a selective and sustainable pretreatment

Gomes-Dias, Joana S.; Romaní, Aloia; Teixeira, José A.; Rocha, Cristina M.R.
ACS Sustainable Chemistry & Engineering, 8(46), 17143-17153, 2020

A tailspike with exopolysaccharide depolymerase activity from a new *Providencia stuartii* phage makes multidrug-resistant bacteria susceptible to serum-mediated killing

Oliveira, Hugo; Pinto, Graça; Mendes, Bruna; Dias, Oscar; Hendrix, Hanne; Akturk, Ergun; Noben, Jean-Paul; Gawor, Jan; Lobočka, Malgorzata; Lavigne, Rob; Azeredo, Joana
Applied and Environmental Microbiology, 86(13), e00073-20, 2020

3RD CYCLE



Eugénio Manuel Faria
Campos Ferreira

Director

BIOENGINEERING

Consortium with Univ. Lisbon,
Univ. Nova de Lisboa in
collaboration with MIT
Interdepartmental Education Project



José António Couto
Teixeira

Director

FOOD SCIENCE AND TECHNOLOGY AND NUTRITION

Taught in collaboration with:
Universidade Católica Portuguesa
and Universidade de Aveiro
Interdepartmental Education Project



José Manuel Ferreira
Machado

Director

BIOMEDICAL ENGINEERING

Taught in collaboration with:
ALGORITMI, 3B's, CEB, CMEMS
and MEtRICS
Interdepartmental Education Project



Maria Cândida Lobo
Guerra Vilarinho

Director

WASTE MANAGEMENT AND TREATMENT

Taught in collaboration with:
CTAC, CEB, MEtRICS, IPC and
ISISE
Interdepartmental Education Project



Joana Cecília Valente
Rodrigues Azeredo

Director

CHEMICAL AND BIOLOGICAL ENGINEERING

EVENTS

- XXIII Jornadas de Engenharia Biológica
- EXPOBIOTEC 2020 - Biotech Expo
- European Researchers Night 2020
- European Waste Prevention Week - Webinar: "The other life of waste"
- Science & Technology Week @ CEB-UMinho
- Cross-border Biotechnology Cluster - Closing Session
- Biofilm transcriptomics: quantifying gene expression from pathogenic bacterial b...
- Welcoming new MBioTec students
- Welcoming new MIEB students
- YPACK final event - Food Packaging for a Circular Bioeconomy
- Viruses of Microbes 2020 Webinar Series: Take a walk on the VoM side
- 1st Chemical and Biological Engineering Doctoral Symposium
- 5th international practical Biofilm course and symposium
- UPA - UMinho Portas Abertas Digital - EXPLORAR ENGENHARIA: BIOS - Biotecnologia,...
- S2M2 - Summer School in Metabolic Modeling 2020
- 2nd BIOVINO Project meeting - Development of a cross-border strategy for the eco...
- iWATERMAP: stakeholders meeting: Innovation Roadmaps and Action Plan
- iWATERMAP: 4th partner meeting
- Open Innovation and the financing of R&D and Innovation activities [Postponed] - Event Closed
- CEB na Escola
- Ready for BioData Management - Introduction to Data Management Plans
- Bioinformatics Open Days 2020

COLLABORATION WITH OTHER RESEARCH CENTRES / COLABS

Germany - Universitätsklinikum Hamburg-Eppendorf

Austria - Universität für Bodenkultur Wien

Belgium - Katholieke Universiteit Leuven, Université Catholique de Louvain, Université de Mons

Brazil - Laboratório Nacional de Ciência e Tecnologia do Bioetanol, Universidade Católica de Pernambuco, Universidade de Campinas, Universidade de São Paulo, Universidade de Sorocaba, Universidade Federal de Lavras, Universidade Federal de Pernambuco, Universidade Federal de Santa Catarina, Universidade Federal de Viçosa, Universidade Federal do Amazonas, Universidade Federal do Ceará, Universidade Federal do Rio de Janeiro, Universidade Federal do Rio Grande do Norte, Universidade Federal Rural de Pernambuco, Universidade Federal São Carlos

Bulgaria - Bulgarian Academy of Sciences

Canada - Université Laval, University of Guelph

Chile - Universidad Católica de Valparaíso, Universidad de La Frontera

China - Jiangnan University

Colombia - Universidad EAFIT, Universidad Nacional de Colombia, Universidade de Antioquia

South Korea - Sookmyung Women's University

Denmark - Technical University of Denmark

Spain - Instituto de Agroquímica y Tecnología de Alimentos (CSIC), Mision Biologica de Galicia (CSIC), Universidad Complutense de Madrid, Universidad de Granada, Universidad de Salamanca, Universidade de Santiago de Compostela, Universidade de Vigo, Universitat Autònoma de Barcelona, Universitat de Lleida
USA - Argonne National Laboratory, Harvard University, Massachusetts Institute of Technology, National Institutes of Health, North Carolina State University, Northwestern University, University of California Berkeley, University of California San Diego

Europe - European Bioinformatics Institute, European Molecular Biology Laboratory, International Nanotechnology Laboratory, EERA - European Energy Research Alliance, ELIXIR - European Life Sciences Infrastructure for Biological Information,

INSTRUCT - European Research infrastructure in Structural Biology, MIRRI - European Research Infrastructure for Microbial Resources, OPENSREEN - European Research Infrastructure for High-Throughput Screening WETSUS - European Centre of Excellence for Sustainable Water Technology

Finland - VTT Technical Research Centre of Finland

France - AgroParisTech, Institut National des Sciences Appliquées Toulouse, Institute Pasteur, Université de Lorraine, Université de Rennes

Netherlands - Delft University of Technology, Universsity of Groningen, Wageningen University

Hungary - Szent István University

Iran - University of Tehran

Italy - Università Cattolica del Sacro Cuore, University of Milano-Bicocca

Malaysia - Universiti Putra Malaysia

Morocco - University of al-Quaraouiyne

Mexico - Universidad Autónoma de Coahuila

New Zealand - Riddet Institute - Massey University, The University of Auckland

Poland - Medical University of Gdańsk, Wrocław Medical University

UK - Cardiff University, Imperial College London, University of Bath, University of Cambridge, University of Cranfield, Wellcome Trust Sanger Institute

Czech Republic - "Institute of Chemical Process Fundamentals, University of Chemistry and Technology, University of Ostrava"

Romania - Gheorghe Asachi Technical University of Iași

Sweden - Chalmers University of Technology, Lund University, University of Borås

Thailand - Chulalongkorn University

Turkey - Istanbul Technical University

Ukraine - Kharkiv National University of Economics

FLAGSHIP PROJECTS

Development and consolidation of research in the agri-food sector in Northern Portugal

NORTE-45-2020-20 - Sistema de Apoio à Investigação Científica e Tecnológica - "Projetos Estruturados de I&D&I" - UNorte
Reference
NORTE- 01-0145-FEDER-000041
Project AgriFood XXI is a multidisciplinary project focused on the entire food chain with special emphasis on the economically most important crops of Northern Portugal. This project is implemented by a multidisciplinary team of UNorte.PT – UMinho, UP and UTAD.

Global Omic Data Integration on Animal, Vegetal and Environment Sectors

Funding Program
H2020-NMBP-TR-IND-2020-twostage.
BIOTEC-07-2020 - Multi-omics for genotype-phenotype associations (RIA)
Reference
952908
GLOMICAVE project addresses the need for building systems that allow streamlining both the experimental design and the analysis and integration at a systems level of large-scale omics experiments.

Microbial Interactions between Gardnerella, Prevotella, and Atopobium Prior to Incident Bacterial Vaginosis

Funding Body: NIH - National Institutes of Health (U.S. Department of Health and Human Services). Partners: Universidade do Minho; Louisiana State University; University of Alabama at Birmingham
The project aims at investigating changes in the vaginal microbiota related to Bacterial vaginosis

SCIENTIFIC RECOGNITION

José António Teixeira: Highly Cited Scientist 2020 (Web of Science Group)

José António Teixeira among the world's most influential scientists

António Vicente: Highly Cited Scientist 2020 (Web of Science Group)

António Vicente among the world's most influential scientists

Joana Azeredo names a group of viruses

Joana Azeredo is the first Portuguese and the fourth in the world with this nomination and at an unusual stage of her career

SCIENTIFIC LEADERSHIP

Nelson Lima as international collaborator of NEXER (Network for Extreme Environment Research)

Nelson Lima has been involved since the 1st Workshop on December 2016 (Pucón, Chile) on NEXER activities.

EU Project YPACK Develops Innovative Biodegradable Food Packaging Extending Food Shelf Life

EU-funded project YPACK show that an innovative formulation of active ingredients could allow this biodegradable food packaging to prolong the shelf life of foods and therefore reduce food waste.

Hair Cosmetic Technology created at CEB help to raise venture capital support

K18Peptide is powered by a patented biomimetic keratin peptide technology clinically proven to repair, strengthen and improve the elasticity of hair in four minutes.

AWARDS AND SCIENTIFIC DISTINCTIONS

José António Teixeira e António Vicente - Two of the world's most cited scientists according to the Highly Cited Researchers 2020 list by US-based Clarivate Analytics

CEB researcher wins Medal of Honor L'Oréal Portugal - **Diana Priscila Pires** received 15 thousand euros to develop alternative therapy to antibiotics

ALGORITMI RESEARCH CENTRE



**José Manuel
Ferreira Machado**
Director

ALGORITMI's origin can be traced back to 1990. A few researchers in the middle of the 90s, in the North of Portugal, identified the need of further research classes in two main areas: Information Systems and Technologies, and Electronics and Systems Engineering. In 2020, ALGORITMI will be celebrating its 26th Anniversary.

The ALGORITMI Research Centre is a Research Unit of the School of Engineering, UMinho, that develops R&D activity in Information and Communications Technology and Electronics (ICT&E), spreading into six major fields: (1) Computer Science and Technology (CST); (2) Information Systems and Technology (IST); (3) Computer Communications and Pervasive Media (CCPM); (4) Industrial Electronics (IE); (5) Industrial Engineering and Management (IEM); (6) Systems Engineering and Operational Research (SEOR). This centre is a multi-disciplinary Research Unit, with a heterogeneous international activity, maintaining active exchange programs with universities and research centres all around the world.

Nowadays, ALGORITMI is focused on: enhancing its international publications track record; increasing its funding track record; supporting researchers applying for funding and project management; increasing its potential for sustainable development through external funding and/or commercialisation of its research outputs; adding value to its overall research strategy; contributing to regional and national economic development and enhancing the quality of the postgraduate offer. The majority of PhD-level researchers of the Centre are also Faculty members of four departments of the School of Engineering, namely: Industrial Electronics (DEI), Information Systems (DSI), Industrial Engineering & Management (DPS) and Informatics (DI). Furthermore, the MSc and PhD projects supervised by those Faculty members are developed at ALGORITMI. ALGORITMI Research Centre focuses its activity on projects that explore a strong link with the community, namely, the industry and the public administration.

UMinho is located in an industrialised region with an important footprint in the textile and footwear industries and in an emerging field on ICT services enterprises, pushed by the e-phenomena age. The automotive industrial field also gained recently an important share of the regional market. Another external factor that influences our target field of application is the growth of the cities in the region, which introduces several demands for the co-operation of researchers, namely in the field of logistics, communication, e-government, health and resource management. The results of this policy are stated by the number of applied research projects in cooperation with companies (funded by ANI and QREN) and by specific national projects, namely POSI, POCTI and POE programmes.

In the 2019 evaluation carried out by the National Science Foundation (FCT), ALGORITMI was awarded with the grade of Very Good.



**Jorge Miguel Nunes
Santos Cabral**
Vice-director



**Maria Sameiro Brandão
Soares Carvalho**
Vice-director



**Paulo Alexandre
Ribeiro Cortez**
Vice-director



**PHD FULL
MEMBERS**

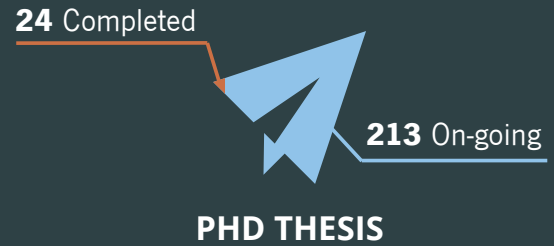
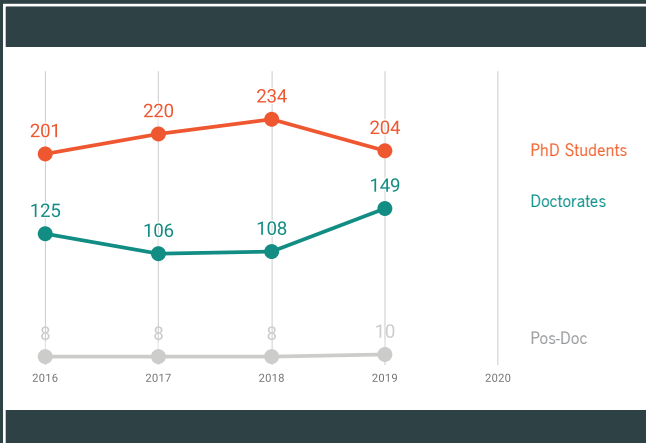
423 National

89 International

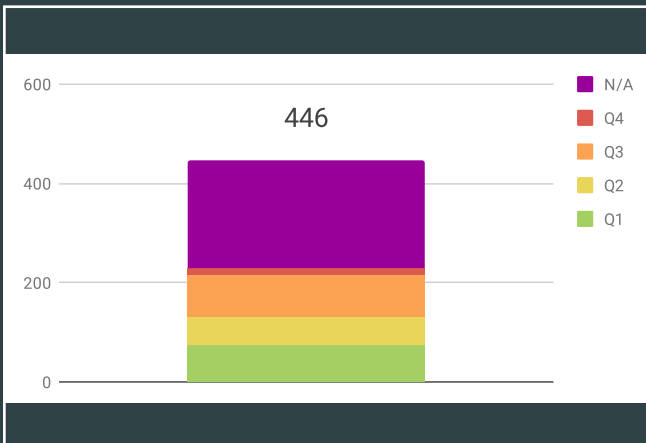


STAFF

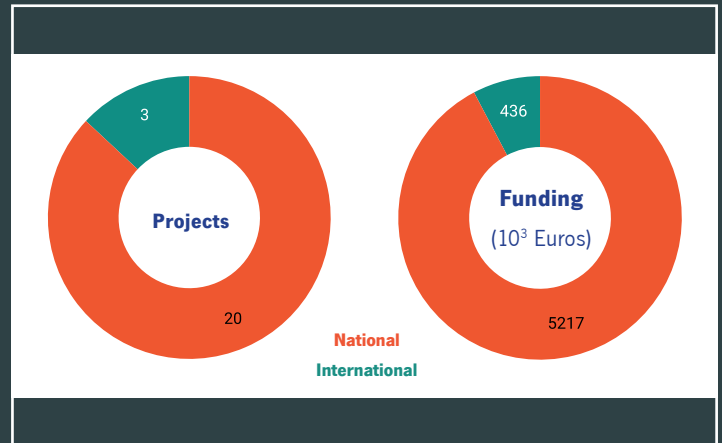
PHD EVOLUTION



NO. OF PUBLICATIONS IN INDEXED JOURNALS



RESEARCH PROJECTS AND FUNDING



FLAGSHIP PUBLICATIONS

A multivariate approach for multi-step demand forecasting in assembly industries: Empirical evidence from an automotive supply chain

Gonçalves J.N.C., Cortez P., Carvalho M.S., Frazão N.M., Decision Support Systems, Article number 113452

Multiobjective optimization of transit bus fleets with alternative fuel options: The case of Joinville, Brazil

Machado W. E., Costa L., Carvalho S., Telhada J., Lanzer E., International Journal of Sustainable Transportation, 14:1, 14-24, 2020

FIBR3DEmul—an open-access simulation solution for 3D printing processes of FDM machines with 3+ actuated axes

Faria C., Fonseca J., Bicho E., International Journal of Advanced Manufacturing Technology, Volume 106, Issue 7-8, 1 February 2020

Supply chain data integration: A literature review

Vieira A.A.C., Dias L.M.S., Santos M.Y., Pereira G.A.B., Oliveira J.A., Journal of Industrial Information Integration, Volume 19, September 2020

Continuous authentication with a focus on explainability

Rocha R., Carneiro D., Novais P. Neurocomputing ISSN 0925-2312, 2020

3RD CYCLE



**Filomena Maria
Rocha Soares**
Director

ELECTRONICS AND COMPUTER ENGINEERING

Taught in collaboration with:
CMEMS
Interdepartmental Education Project



**Paula Fernanda
Varandas Ferreira**
Director

INDUSTRIAL AND SYSTEMS ENGINEERING



**João Eduardo Quintela
Alves Sousa Varajão**
Director

INFORMATION SYSTEMS AND TECHNOLOGY



**Paulo Jorge Freitas
Oliveira Novais**
Director

INFORMATICS



**João Miguel Lobo
Fernandes**
Director

ADVANCED ENGINEERING SYSTEMS FOR INDUSTRY



**José Manuel
Ferreira Machado**
Director

BIOMEDICAL ENGINEERING

Taught in collaboration with:
3B's Resarch Group, CEB, CMEMS
and MEtRICs
Interdepartmental Education Project



**Adriano Jorge
Cardoso Moreira**
Director

TELECOMMUNICATIONS MAP-TELE

Taught in collaboration with:
Univ. Aveiro



**Jorge Miguel Matos
Sousa Pinto**
Director

COMPUTER SCIENCE MAP-I



**Rui Alberto Madeira
Macedo Lima**
Director

LEADERS FOR TECHNICAL INDUSTRIES

COLLABORATION WITH OTHER RESEARCH CENTRES / COLABS

Austria	ISCN Graz; TU Graz; FH Joanneum;	Latvia	Riga Techniska Universitate (RTU)
Belgium	ETRMA; ACEA; CLEPA; Efvet; VITO-Vlaamse Instelling voor Technologisch Onderzoek;	Liechtenstein	Universität Liechtenstein
Brazil	Universidade Federal do Rio de Janeiro; Universidade Tecnológica Federal do Paraná; Universidade Federal de Santa Catarina; Universidade Federal de Sergipe;	Lithuania	VILNIUS GEDIMINAS TECHNICAL UNIVERSITY; Kaunas University of Technology
Chile	Universidad de Valparaíso;	Mexico	Instituto Politécnico Nacional;
Colombia	Universidad del Magdalena;	Mozambique	Universidade Pedagógica de Moçambique
Croatia	University of Zagreb	Netherlands	University of Twente, Center for Higher Education Policy Studies (CHEPS); Symbol Business Improvement;
Czech Republic	VSB-TU Ostrava;	Norway	European Centre for Women and Technology
Denmark	Department of Planning, Aalborg University	Poland	East Automotive Alliance; Białystok University of Technology; Universidade de Tecnologia de Rzeszów
Finland	University of Turku	Portugal	Centro Hospitalar do Porto, E.P.E.,
Finlândia	University of Turku	Romania	APIA; University Politehnica of Bucharest
France	Université de Lille	Russia	Urgench State University
Germany	Technischen Universität Dresden; ERCIS - Headquarters of the European Research Center for Information Systems -University of Muenster; Fraunhofer-Gesellschaft;	Slovakia	Technical University of Kosice
Greece	NATIONAL TECHNICAL UNIVERSITY OF ATHENS – NTUA; Technological Educational Institute of Epirus; ViLabs OE;	Spain	Universidad de Leon; Universidade de Castilla-La Mancha; SERNAUTO; Mondragon University; AIC; GESTAMP; CITIC Research Unit; Universidad Politecnica de Madrid
Hungary	Budapest University of Technology and Economics;	Sweden	Lunds Universitet; JÖNKÖPING UNIVERSITY
India	Poddar Institute of Management & Technology; National Institute of Technology Durgapur	Thailand	Institute of Technology; Asian Institute of Technology
Italy	University of Bergamo; SPIN 360; Confindustria; Università degli Studi di Napoli Federico II; Polytechnic University of Turin; Università degli studi di Modena e Reggio Emilia; University of Genoa	UK	The Open University; University of Durham; Southampton Solent University; University of Southampton; SEMTA, Imperial College London; Lancaster University;
Japan	National Institute of Informatics	Ukraine	Kharkiv National University of Economics
Kyrgyzstan	Arabaev Kyrgyz State University; Osh State University	USA	University of North Carolina at Greensboro; Northeastern University; Harvard University;

EVENTS

- Computational Optimization and Applications (COA 2020) Workshop of the ICCSA 2020 Conference
- 4th ICQEM20 - International Conference on Quality Engineering and Management 2020
- 6th EAI International Convention on Science and Technologies for Smart Cities
- ICPEC 2020 : 1st International Computer Programming Education Conference
- EAI SESC 2020 – 2nd EAI International Conference on Sustainable Energy for Smart Cities
- 20ª Conferência da Associação Portuguesa de Sistemas de Informação (CAPSI2020)
- 21st International Conference on Intelligent Data Engineering and Automated Learning (IDEAL 2020)
- VIII Simpósio do Grupo de Eletrônica de Potência e Energia
- 14th International Conference on Automatic Control and Soft Computing
- 20th IEEE International Conference on Autonomous Robot Systems and Competitions (ICARSC'2020)
- Workshop de Gestão de Projetos 2020
- 12th International Symposium on Ambient Intelligence (ISAmI2020)
- Healthy and Secure People, ICT4AWE 2020
- Healthcare Information Systems - Interoperability, Security and Efficiency (HISISE)
- Computational and Applied Statistics (CAS 2020) Workshop of the ICCSA 2020 Conference

FLAGSHIP PROJECTS

ESGRIDS - Enhancing Smart GRIDs for Sustainability

Development of innovative power electronics solutions for an intelligent, sustainable and efficient electrical system. Such solutions aim at the integration of renewable energies, energy storage and compensation of electricity quality problems, as well as electric mobility systems.

IntVIS4Insp - Sistema de Visão por Computador Inteligente e Flexível para Inspeção

The IntVIS4Insp project has as main objective to conceive, develop and demonstrate new concepts of flexibility and adaptability for the areas of automatic inspection, using the manipulation of complex objects, through the systematic use of computer vision technology and artificial intelligence.

Test System Intelligent Machines

The TSIM project aims to develop computer tools that make the automation of test equipment more flexible and more efficient and intelligent. In this way, several coupling modules will be developed that allow the testing of different types of products on the same equipment, a self-diagnosis system and the inclusion of augmented and mixed reality for viewing test equipment information and after-sales assistance.

SCIENTIFIC RECOGNITION

3 researchers won IBM Demonstration Award PAAMS'20

"Bruno Fernandes, Jose Neves, and Cesar Analide, researchers of ALGORITMI, won IBM Demonstration Award PAAMS'20 - 18th International Conference on Practical Applications of Agents and Multi-Agent Systems with title "SafeCity: A platform for Safer and Smarter Cities"

Researcher of ALGORITMI won "Shark Tank Edition 2020" idea contest

Gérémi Dranka, PhD student and Researcher of ALGORITMI, and his team won the "Shark Tank Edition 2020" idea contest, held as part of the annual conference of the International Mentoring Foundation for the Advancement of Higher Education (IMFAHE)

Best Paper Applications at DCAI 2020

Best Paper Applications at DCAI 2020 -17th International Conference on Distributed Computing and Artificial Intelligence, with paper intitle "Multi-step Ultraviolet Index Forecasting using Long Short-Term Memory Networks" by Pedro Oliveira, Bruno Fernandes, Cesar Analide and Paulo Novais

SCIENTIFIC LEADERSHIP

IEEE Computational Intelligence Society Portuguese Chapter

José Machado, director of ALGORITMI, and Paulo Novais was nominated for chair and vice-chair of IEEE Computational Intelligence Society Portuguese Chapter

AWARDS AND SCIENTIFIC DISTINCTIONS

Gérémi Dranka - Winner of "Shark Tank Edition 2020", on International Mentoring Foundation for the Advancement of Higher Education (IMFAHE)

Paulo Novais - Medalha da Vila de São Torcato, Guimarães

Pedro Oliveira, Bruno Fernandes, Cesar Analide and Paulo Novais - Best Paper Applications at DCAI 2020 - "Multi-step Ultraviolet Index Forecasting using Long Short-Term Memory Networks"

Bruno Fernandes, Jose Neves, and Cesar Analide - IBM Demonstration Award PAAMS'20 SafeCity: A platform for Safer and Smarter Cities

CENTER FOR MICROELECTROMECHANICS SYSTEMS



Paulo Mateus
Mendes
Director

The Center for MicroElectroMechanics Systems (CMEMS) was established in December 2013 at UMinho and supports a research team with high degree of multidisciplinary members, from different backgrounds (engineering, physics, medical) and from academic and industrial fields. It must be stated that CMEMS members include senior researchers, national and internationally distinguished collaborators, post-doctoral investigators, PhD and Master students, as well industrial partners. The focus is on modelling computation, development and micro/nano fabrication of devices and components for two major domains: industrial applications (automotive, aerospace, energy, textile) and biomedical applications (neuroengineering, microendoscopy, surgery, rehabilitation). The industrial applications are focused on microdevices and components: mechanical, optical, wireless, energy scavenging, for satellites, for navigation, and industrial coatings. The biomedical applications highlight the neuronal electrodes, lab-on-a-chip, endoscopic capsules, implantable devices, smart prostheses, surgical microinstruments, cellular solutions bioinspired and micro/nano functionalisation of surfaces.

The excellence can only be achieved through international cooperation. In this way, during the period 2013-2018, several partnerships were established with European, American, and Brazilian Universities in the field of micro/nano fabrication and biomedical applications. As can be observed from CMEMS publications authors, a significant number are produced with international investigators (approximately 40%), as well as with industrial partners. Moreover, national and regional key players should also be taken into account.

The vision of the CMEMS can be stated as being that of an interdisciplinary and multidisciplinary Centre of excellence pioneering high international impact research and innovation in the development of smart microsystems and biomedical systems and maintain active exchange programs with universities, research centres and other laboratories around the world in the field of micro-nano fabrication and biomedical applications.

In the 2019 evaluation process carried out by the National Science Foundation (FCT), CMEMS was awarded with the grade of Excellent.



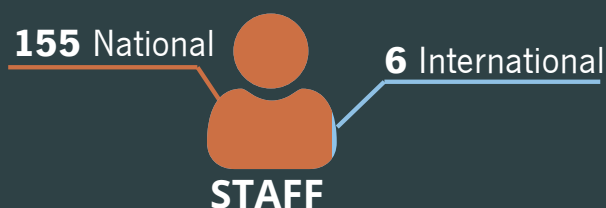
José Luís de C. M.
Alves
Vice-director



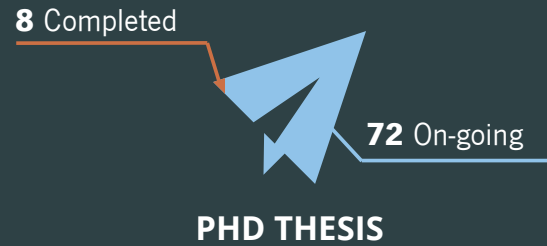
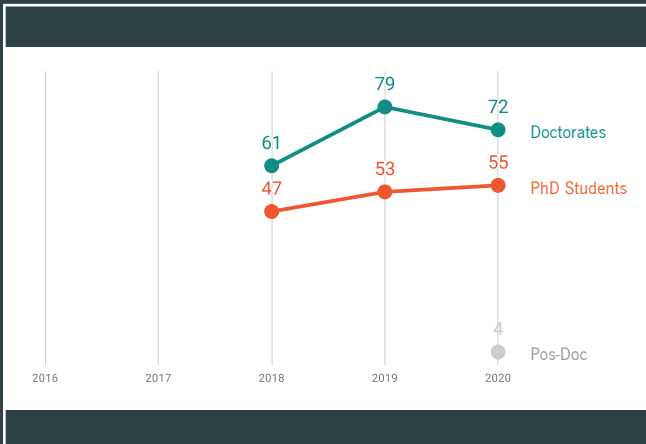
Nuno Miguel
Magalhães Dourado
Vice-director



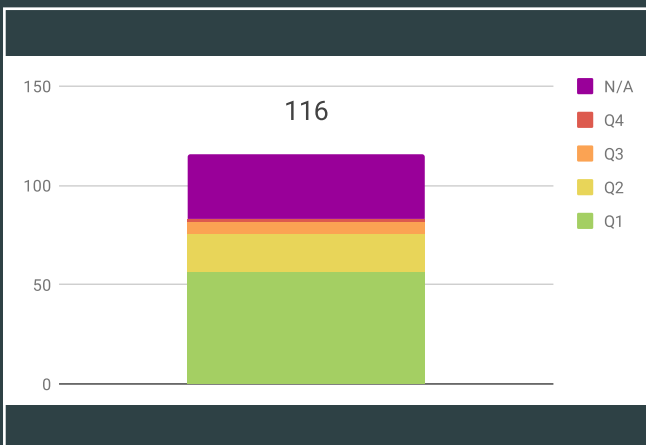
**PHD FULL
MEMBERS**



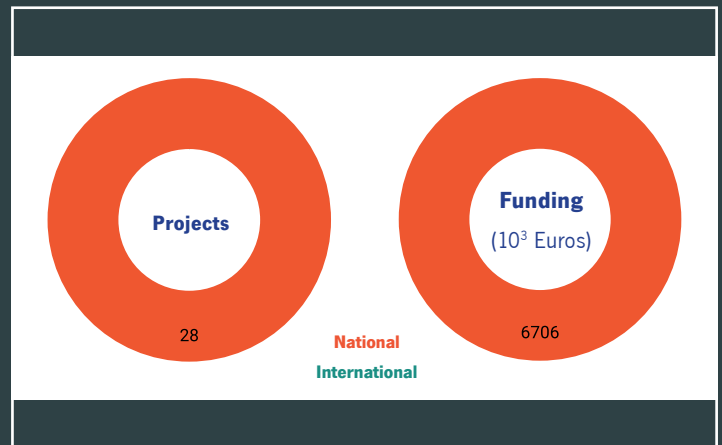
PHD EVOLUTION



NO. OF PUBLICATIONS IN INDEXED JOURNALS



RESEARCH PROJECTS AND FUNDING



FLAGSHIP PUBLICATIONS

Perovskite ferroelectric thin film as an efficient interface to enhance the photovoltaic characteristics of Si/SnOx heterojunction

J.P.B. Silva, E.M.F. Vieira, J.M.B. Silva, K. Gwozdz, F.G. Figueiras, M. Pereira, *Journal of Materials Chemistry A*, 2020, 8, 11314–11326

A Heart-Breast Cancer-on-a-Chip Platform for Disease Modeling and Monitoring of Cardiotoxicity Induced by Cancer Chemotherapy

J. Lee, S. Mehrotra, E. Zare-Eelanjegh, R.O. Rodrigues, A. Akbarinejad, et al., *Small* 2020, 2004258

Degradation behavior of Ti-Nb alloys: Corrosion behavior through 21 days of immersion and tribocorrosion behavior against alumina

I. Çaha, A.C. Alves, P.A.B. Kuroda, C.R. Grandini, A.M.P. Pinto, L.A. Rocha, F. Toptan, *Corrosion Science*, 2020, 167, 108488

Organ-on-a-Chip: A Preclinical Microfluidic Platform for the Progress of Nanomedicine

“R.O. Rodrigues, P.C. Sousa, J. Gaspar, M. Bañobre-Lopez, R. Lima, G. Minas, *Small* 2020, 16, 51, 2003517”

Current Perspectives on the Biomechanical Modelling of the Human Lower Limb: A Systematic Review

Silva M, Freitas B., Andrade R., Carvalho Ó., Renjewski D., Flores P. et al., *Archives of Computational Methods in Engineering*, 2020, 1-36.

3RD CYCLE



Filomena Maria Rocha
M. Oliveira Soares
Director

ELECTRONICS AND COMPUTER ENGINEERING

Taught in collaboration with:
ALGORITMI
Interdepartmental Education Project



Ana Maria Pires
Pinto
Director

MATERIALS ENGINEERING

Taught in collaboration with:
IPC
Interdepartmental Education Project



José Manuel Ferreira
Machado
Director

BIOMEDICAL ENGINEERING

Taught in collaboration with:
ALGORITMI, 3B's, CEB, CMEMS
and MEtRICS
Interdepartmental Education Project



José Luís Carvalho
Alves
Director

MECHANICAL ENGINEERING

Taught in collaboration with:
MEtRICS
Interdepartmental Education Project



Ana Maria Pires
Pinto
Director

ADVANCED MATERIALS AND PROCESSING



Rui Alberto Madeira
Macedo Lima
Director

LEADERS FOR TECHNICAL INDUSTRIES



Adriano Jorge
Cardoso Moreira
Director

TELECOMMUNICATIONS MAP-TELE

Taught in collaboration with:
Univ. Aveiro

EVENTS

- Smart Walker Webinar
- I9MASKS

COLLABORATION WITH OTHER RESEARCH CENTRES / COLABS

Portugal - INL - Internacional Iberian Nanotechnology Laboratory

Portugal - Faculdade de Ciências da Universidade do Porto

Portugal - Centro Clínico Académico

Portugal - Faculdade de Engenharia da Universidade do Porto

Portugal - Centro para a Excelência e Inovação na Indústria Automóvel (CEIIA)

Portugal - CENTITVC - Centro de Nanotecnologia e Materiais Técnicos, Funcionais e Inteligentes (CENTI)

Portugal - Centro de Apoio Tecnológico à Indústria Metalomecânica (CATIM)

Portugal - INOV - Instituto de Novas Tecnologias

Portugal - Centro de Investigação Tecnológica do Algarve (CINTAL/UAlg)

Portugal - Centro Tecnológico da Indústria de Moldes, Ferramentas Especiais e Plásticos (CENTIMFE)

Portugal - Centro de Computação Gráfica (CCG)

USA - UT Austin

France - Grenoble Institute of Neuroscience

Brazil - Universidade S. Paulo - S. Carlos

Spain - Universidade de Vigo

Spain - IIM-CSIC - Instituto de Investigacións Mariñas [Consejo Superior de Investigaciones Científicas]

Spain - ANFACO - CECOPESCA - Centro Técnico Nacional de Conservación de Productos de la Pesca

FLAGSHIP PROJECTS

ITEC Smart Automation I4.0

The project aims to develop technological solutions to meet the challenges of Industry 4.0 and has as main objectives to develop solutions in the field of automatic visual inspection, Smart machines and systematised software development processes

MICRO&NANOFABS@PT INFRASTRUCTURE

The main goals are to share access to micronanofabrication and design tools with the research community and to increase competitiveness in the medical, environmental, energy, automotive fields. The UMinho infrastructure consists on an Atomic Layer Deposition System, Direct Writing-Laser and a Reactive Ion Etching system

IMPHIB- Development of advanced Hybrid Implants

The ImpHib project fits into a logic of development of bio-inspired components where different biological inspired solutions are incorporated into human engineered components. In this project, a dental implant with a gradient of materials and properties is being developed, in order to guarantee mechanical resistance, biocompatibility, and aesthetics

CENTRE FOR TERRITORY, ENVIRONMENT AND CONSTRUCTION



José Barroso de Aguiar
Director

The Centre for Territory, Environment and Construction (CTAC) is a Research Unit of the School of Engineering of UMinho, recognised by the National Science Foundation (FCT), associated to the Department of Civil Engineering (DEC), with whom it shares resources and namely human resources.

Currently CTAC aggregates 24 researchers holding a PhD of which 20 are faculty professors of the Civil Engineering Department.

The general objective of the unit is to produce knowledge to support its vision of “Sustainable and Resilient Cities and Territories”, developing innovative materials and technologies and systems in the fields of built environment, systems and infrastructures for transport, water and wastewater and for territory development, contributing to climate-change-resilient buildings and infrastructures, supporting a steady improvement in the quality of life. To fulfil this objective, CTAC combines R&D activities with advanced training, technology transfer, consulting and services, aiming at fostering engineering and construction sectors and environmental entities to support the quality of cities and territories. CTAC has a dynamic international cooperation through will partnerships covering the development of research projects by participating in international research networks, mainly in the fields of sustainable environment as well as in international projects of knowledge transfer.

The link between research and society constitute the driving force of intervention of the unit, where, in addition to the contribution for more sustainable built environment, territories, people play the central role, contributing to the improvement of the quality of life.

CTAC is also involved in several masters and doctoral programmes, covering the main research fields of the unit, under the leading principle “to teach what is being investigated”, together with other units’ research, from UMinho and other universities.



José Luís Silva Pinho
Vice-director



Daniel Souto Rodrigues
Vice-director

37

PHD FULL
MEMBERS

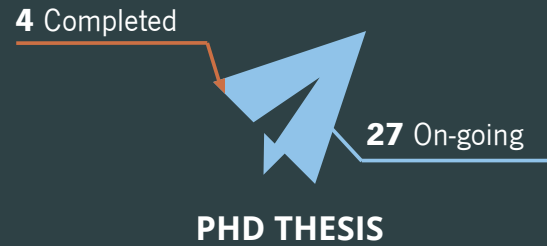
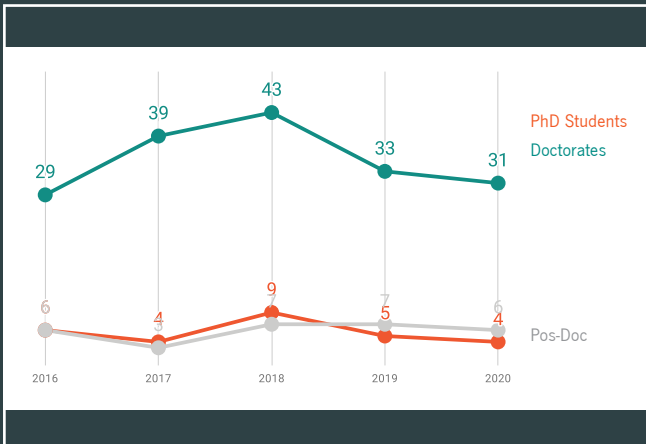
192 National



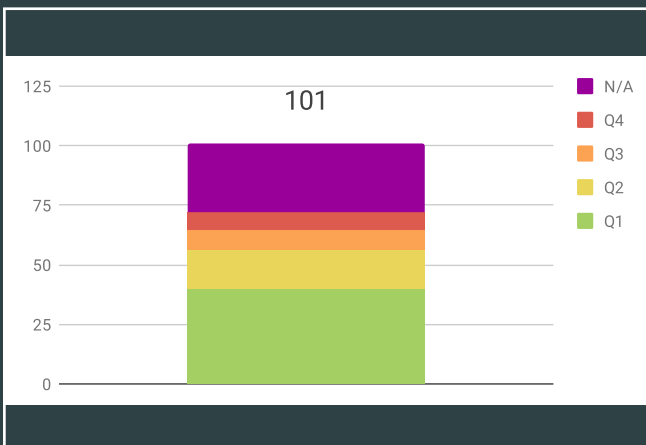
STAFF

0 International

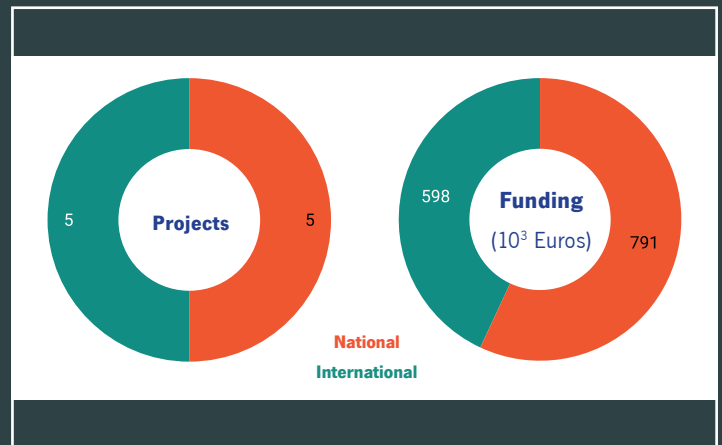
PHD EVOLUTION



NO. OF PUBLICATIONS IN INDEXED JOURNALS



RESEARCH PROJECTS AND FUNDING



FLAGSHIP PUBLICATIONS

Resilience of urban transportation systems. Concept, characteristics, and methods

Gonçalves L. A. P. J., and Ribeiro P. J. G., *Journal of Transport Geography*, vol. 85, pp. 1-15, doi:10.1016/j.jtrangeo.2020.102727, 2020.

Hydro- and Morphodynamic Impacts of Sea Level Rise: The Minho Estuary Case Study

Melo W., Pinho J. L. S., Iglesias I., Bio A., Avilez-Valente P., Vieira J. M. P., Bastos L., and Veloso-Gomes F., *Journal of Marine Science and Engineering*, vol. 8, issue 441, doi:10.3390/jmse8060441, 2020.

Evaluation of CNT/GNP's Synergic Effects on the Mechanical, Microstructural, and Durability Properties of a Cementitious Composite by the Novel Dispersion Method

Abedi M., Figueiro R., Camões A., and Correia G. A., *Construction and Building Materials*, vol. 260, pp. 17 pp, doi:10.1016/j.conbuildmat.2020.120486, 2020.

Low-Frequency Noise and Its Main Effects on Human Health—A Review of the Literature between 2016 and 2019

Alves J., Neto F., Silva L. T., and Remoaldo P. C. A., *Applied Sciences*, 5205, vol. 10, pp. 1-39, doi:10.3390/app10155205, 2020.

Application of alkali-activated industrial wastes for the stabilisation of a full-scale (sub)base layer

Miranda T., Leitão, D., Oliveira J. R. M., Corrêa-Silva M., Araújo N., Coelho J., Fernández-Jiménez A., and Cristelo N., *Journal of Cleaner Production*, 118427, vol. 242, doi:10.1016/j.jclepro.2019.118427, 2020.

3RD CYCLE



Joaquim António
Oliveira Barros
Director

CIVIL ENGINEERING



Luís Manuel Bragança
Miranda Lopes
Director

SUSTAINABLE BUILT ENVIRONMENT



Maria Cândida Lobo
Guerra Vilarinho
Director

WASTE MANAGEMENT AND TREATMENT

Taught in collaboration with:
CEB, MEtRICs, IPC and ISISE

Interdepartmental Education Project

EVENTS

- 1º Seminário Internacional e 2º Seminário Nacional de Prevenção e Proteção Contra Incêndio, realizado pela Universidade Federal de Santa Maria, Brasil, entre os dias 26 de outubro e 07 de novembro de 2021 – member of the organizing committee.
- 3rd International Congress on Urban and Civil Engineering, Budapest, Hungary – member of the organizing committee
- 8th Global Congress and Expo on Materials Science and Nanoscience, Porto, Portugal, October 2020 – member of the organizing committee
- Organização do IV Ciclo de seminários sobre Processos e Tecnologias de Construção – Inovação e desafios para o futuro

COLLABORATION WITH OTHER RESEARCH CENTRES / COLABS

Spain - Universidad de Santiago de Compostela

Spain - Centro de Valorización Ambiental del Norte, S.L.

Spain - Sociedade Galega do Medio Ambiente – SOGAMA

Portugal - CVR - Centro para a Valorização de Resíduos

Portugal - LIPOR – Serviço Intermunicipalizado de Gestão de Resíduos do Grande Porto

Portugal - BRAVAL – Valorização e Tratamento de Resíduos Sólidos, S.A.

Tunisia - Universidade de Sfax

Italy - Universidade do Salento

Algeria - Universidade Abdelhamid Ibn Badis Mostaganem

Italy - Universidade de Pádua

Belgium - Universidade Católica de Leuven

Portugal - IB-S - Institute of Science And Innovation for Sustainability

Portugal - 2C2T - Centro de Ciência e Tecnologia Têxtil

Portugal - Centro ALGORITMI

Portugal - LabPai - Laboratório da Paisagem

Portugal - FEUP -SHRHA (Profª Elsa Carvalho)

Portugal - IST - ID (Prof. Rui M L Ferreira)

Romania - „Gheorghe Asachi” Technical University of Iasi

Portugal - Centre of Materials and Building Technologies (C-MADE)

Brazil - Grupo de Pesquisa AMBITEC – Engenharia Aplicada ao Meio Ambiente – da Universidade de Pernambuco (UPE)

Brazil - Escola Politécnica da Universidade de Pernambuco - POLI/UPE, Programa de Pós-Graduação em Engenharia Civil

Portugal - ARS-Norte, Departamento de Saúde Pública (Dra. Mónica Mata)

Portugal - Aguas do Norte, S.A.

Portugal - APA- Agência Portuguesa do Ambiente (Eng.ª Lara Carvalho)

Portugal - ISEP - Instituto Superior de Engenharia (Prof.ª Cristina Delerue-Matos)

Portugal - Universidade Católica Portuguesa - Escola Superior de Biotecnologia (Prof.ª Célia Menaia)

UK - Univesity Loughborough

Brazil - Fundação FIOCRUZ-Rio de Janeiro

Brazil - Universidade Estadual do Rio de Janeiro - Pós-doutoramento

Brazil - Universidade Federal de São Carlos

Brazil - Universidade Federal de Ouro Preto

FLAGSHIP PROJECTS

Smart cities are walkable: SPN - a model to plan a pedestrian network and a pedestrian navigation system

The overall goal is to provide a model to help European cities to be people oriented by improving walkability as one of the most important dimensions of smart sustainable and inclusive cities.

Coastal adaptation to climate change: know the risks and rise the resilience

MarRisk aims to ensure a sustainable growth of the coastal areas in a climate change scenario. Floods, intensification of extreme events, episodes of toxic algae or coastal erosion are examples of characterised risks.

Low embodied energy geopolymeric concretes with a high waste content

This project aims to develop low embodied energy geopolymeric concretes with a high waste content and its use for reducing energy building cooling needs by using fly ash and waste soda lime silicate glass activated by sodium hydroxide.

SCIENTIFIC RECOGNITION

Highly Cited Scopus Scientist

HCSC (2020 Top100.000 Stanford University ranking)Dr. Fernando Pacheco-Torgal

Best student paper award na SENSORNETS 2020. 9th International Conference on Sensor Networks.

Tiago Costa Araújo, Lúcia T. Silva, Adriano Moreira

SCIENTIFIC LEADERSHIP

ICPIC board

José Luís Barroso de Aguiar is is a member of the International Congress on Polymers in Concrete (ICPIC) board.

AWARDS AND SCIENTIFIC DISTINCTIONS

Dr. Fernando Pacheco-Torgal - Highly Cited Scopus Scientist-HCSC (2020 Top100.000 Stanford University ranking)

Tiago Costa Araújo, Lúcia T. Silva, Adriano Moreira - Best student paper award na SENSORNETS 2020. 9th International Conference on Sensor Networks.

INSTITUTE FOR SUSTAINABILITY AND INNOVATION IN STRUCTURAL ENGINEERING



Paulo B. Lourenço

Director

The Institute for Sustainability and Innovation in Structural Engineering (ISISE) was created in 2007 involving the Civil Engineering Departments from UMinho and University of Coimbra (UC). The objective was to achieve excellence in research and to create a leading cluster in Structural Engineering, with top quality R&D+I and active members. The Unit is based on strong leaderships, with a proven record of internationalisation, contracted research, cooperation with industry, top level dissemination in the international arena, PhD students and post-doc collaborators. ISISE has 90 integrated PhD members (2/3 faculty and 1/3 post-docs) and approximately 120 PhD students, 20 M€ of competitive funding granted (last 5 years), 45 I&D projects in the 2013-2017 period, 4 European Master Courses (3 Erasmus Mundus), 4 PhD Programs and 5 journals as editors and 2 COST Actions. In the last evaluation of R&D Units, FCT rated ISISE as Very Good. The unit is now organised in 4 Research Groups related to Functional Performance (FP), Historical and Masonry Structures (HMS), Structural Composites (SC), and Steel and Mixed Construction Technologies (SMCT). A Management Board (Directors and Coordinators of each group) manages the unit, with monthly video conferences. The hosting institutions have recent, well-equipped and complementary laboratory facilities, with a total area about 5000 m². The main objective of the Unit is to increase the structural and functional performance of Civil Engineering Works, from a perspective of advanced technology and innovation, from Materials to Life Cycle Performance. The approach includes aspects such as advances in experimental and numerical techniques, product development and technology transfer to the industry, durability and reliability, recycle, reuse, conservation and rehabilitation, condition assessment, and risk assessment. These aims are aligned with visions from the European Construction Technology Platform, the European Steel Technology Platform and Priorities in Horizon 2020 but also current and future demands, including aspects such as digital transformation, circular and blue economy, energy, defence and security, infrastructure management, heritage or active ageing. In short, ISISE aims at promoting innovation and sustainability, with a link to the construction industry and an up to date focus on a swiftly changing world.

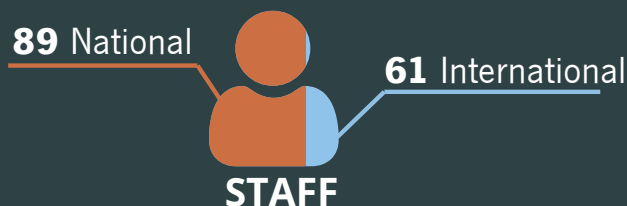


José Sena-Cruz

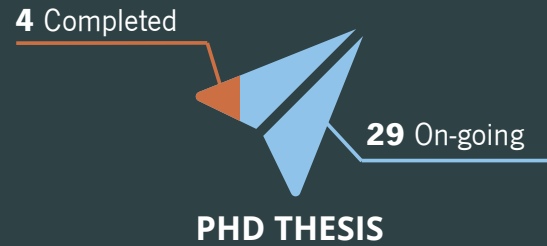
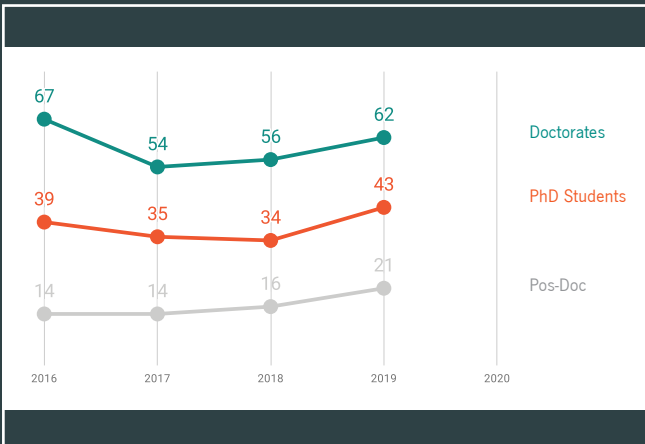
Vice-director



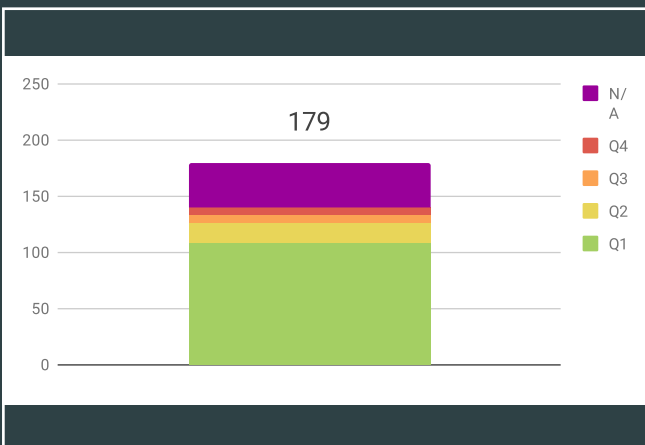
**PHD FULL
MEMBERS**



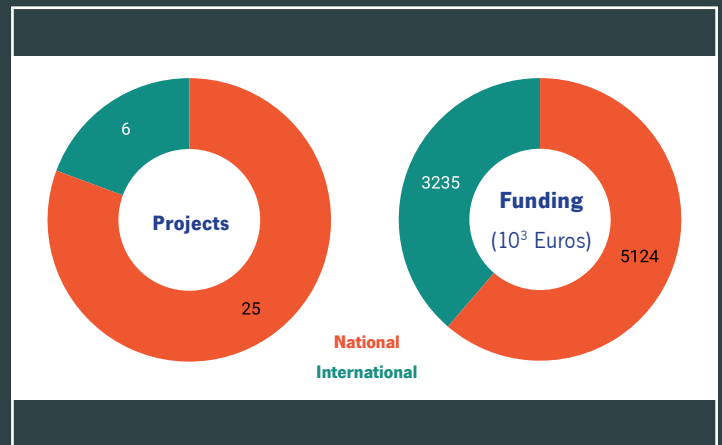
PHD EVOLUTION



NO. OF PUBLICATIONS IN INDEXED JOURNALS



RESEARCH PROJECTS AND FUNDING



FLAGSHIP PUBLICATIONS

Application of alkali-activated industrial wastes for the stabilisation of a full-scale (sub)base layer

Miranda, T., Leitão, D., Oliveira, J., Corrêa-Silva, M., Araújo, N., Coelho, J., Fernández-Jiménez, A., Cristelo, N., *Journal of Cleaner Production*, 2020, Vol. 242, 118427.

Mapping and holistic design of natural hydraulic lime mortars

Apostolopoulou, M., Asteris, P.G., Armaghani, D.J., Douvika, M.G., Lourenço, P.B., Cavaleri, L., Bakolas, A., Moropoulou, A., *Cement and Concrete Research*, 2020, Vol. 136, 106167.

Design of masonry structures (General rules): Highlights of the new European masonry code

Lourenço, P.B., Marques, R., Keynote Lecture In: *Brick and Block Masonry - From Historical to Sustainable Masonry: Proceedings of the 17th International Brick/Block Masonry Conference (17thIB2MaC 2020)*, July 5-8, 2020, Kraków, Poland (p. 3-17).

Internal curing by superabsorbent polymers in alkali-activated slag

Li, Z., Wyrzykowski, M., Dong, H., Granja, J., Azenha, M., Lura, P., Ye, G., *Concrete Research*, 2020, Vol. 135, 106123

Information technology in geo-engineering

Gomes Correia, A., Tinoco, J., Cortez, P., Lamas, L. *Proc. of the 3rd International Conference (ICITG)*, Guimarães, Portugal, Springer Series in Geomechanics and Geoenvironment, ISSN 1866-8755, ISSN 1866-8763 (electronic), ISBN 978-3-030-32028-7, ISBN 978-3-030-32029-4 (eBook), 924pp (2020).

3RD CYCLE



CIVIL ENGINEERING

Joaquim António
Oliveira Barros
Director



WASTE MANAGEMENT AND TREATMENT

Luís Manuel Bragança
Miranda Lopes
Director

Taught in collaboration with:
CEB, MEtRICs, IPC and ISISE

Interdepartmental Education Project



INTERNATIONAL DOCTORAL PROGRAMME IN SUSTAINABLE BUILT ENVIRONMENT

Luís Manuel Bragança
Miranda Lopes
Director

EVENTS

- 3rd Rilem Spring Convention 2020 – Ambitioning a sustainable future for built environment: Comprehensive strategies for unprecedented challenges
- 10th meeting of the fib Working Group 2.4.2 – Modelling of Fibre reinforced concrete structures
- 3rd Portuguese Congress on Building Information Modelling PTBIM
- EuroStruct LiveTalks (12 live lectures)
- Bridge Durability and Network Resilience
- 1st IABSE Online Conference 2020: Facing the New Age! How do Structural Engineers tackle the COVID-19 era?
- EuroStruct Training School Dublin
- IABSE Webinar: “From Quality Control to Decision Making on the Management of Bridges and Structures: What’s Next?”
- 5th World Congress on Civil, Structural, and Environmental Engineering, (CSEE’2020)
- FRP++ Workshop 2020: Challenges on the composites market for the next 10 years and the role of the academy

COLLABORATION WITH OTHER RESEARCH CENTRES / COLABS

Germany - Federal Institute for Materials Research and Testing; RWTH Aachen University; Technical University of Kaiserslautern; University of Kassel

Argentina - University of Buenos Aires

Australia - University of Adelaide

Austria - University of Leoben; University of Natural Resources and Life Sciences

Bosnia and Herzegovina - University of Sarajevo

Brazil - Federal University of Santa Maria; Pontifical Catholic University of Rio de Janeiro; University of Brasilia; Federal University of Minas Gerais

China - University of Macau; Tongji University

Colombia - Universidad Industrial Santander

Cyprus - University of Cyprus

Denmark - University of Aarhus Technical; University of Denmark

Slovakia - University of Zilina

Slovenia - Slovenian National Building and Civil Engineering Institute; University of Ljubljana

USA - Institute of Getty Conservation; University of Lehigh; University of Illinois; University of Nebraska-Lincoln; Iowa State University

Spain - Polytechnic University of Catalonia; Polytechnic University of Valencia; University of Basque Country; University of Castilla La Mancha; University of Girona; University of Salamanca; University of Seville; University of Valladolid; University of Vigo; University Polytechnic of Madrid

Estonia - Tallinn University of Technology

France - University Blaise-Pascal; University Claude Bernard Lyon 1; University of Grenoble Alpes; University of Limoges; University of Orleans

Greece - Aristotle University of Thessaloniki; National Technical University of Athens; University of Patras

Netherlands - Delft University of Technology; Eindhoven University of Technology

Italy - Polytechnic University of Bari; Polytechnic University of Milano; University of Basilicata; University of Bologna; University of Catania; University of Chieti-Pescara; University of Florence; University of Genoa; University of Naples "Federico II"; University of Padova; University of Pavia; University of Perugia; University of Pisa; University of Roma Tre; University of Rome La Sapienza; University of Salento; University of Sannio; University of Trieste; University of Venice; University of Palermo; University of Cassino; University of Chieti-Pescara

Iraq - University of Koya

Lithuania - University of Vilnius

Mexico - Autonomous University of Nuevo León

New Zealand - University of Auckland

Peru - Pontifical Catholic University of Peru

Poland - Cracow University of Technology; GH University of Science and Technology; Lodz University of Technology; Wroclaw University of Science and Technology

UK - University of Leeds; University of Newcastle; University of Northumbria; University of Nottingham; University of the West of England

Czech Republic - Czech Technical University; Institute for Theoretical and Applied Sciences

Serbia - University of Belgrade

Switzerland - Ecole Polytechnique Fédérale de Lausanne; Swiss Federal Laboratories for Material Science and Technology (Empa)

Turkey - Anadolu University; Middle East Technical University; Yildiz Technical University

Vietnam - University of Transport and Communications, Ha Noi

FLAGSHIP PROJECTS

Heritage Within

NORTE-45-2020-20 - Sistema de Apoio à Investigação Científica e Tecnológica - "Projetos Estruturados de I&D&I" - UNorte

Reference

NORTE- 01-0145-FEDER-000041

Project AgriFood XXI is a multidisciplinary project focused on the entire food chain with special emphasis on the economically most important crops of Northern Portugal. This project is implemented by a multidisciplinary team of UNorte.PT – UMinho, UP and UTAD.

CirMAT - CIRcular aggregates for sustainable road and building MATerials

CirMat aims to develop more sustainable structural and bituminous concretes for the construction sector with a high degree of waste incorporation, by using construction and demolition waste and metallurgic industrial byproducts.

REV@CONSTRUCTION – Digital Construction Revolution

This project proposes a transversal approach to the construction industry's value chain, contributing to its digitalization, through tools linked to BIM, the concept of digital-twin, augmented reality, sensors, big data or to the IoT.

SCIENTIFIC RECOGNITION

Best Doctoral Dissertation Award

Best Doctoral Dissertation Award in 2016, for Angelo Gaetani attributed by University of Rome La Sapienza, Italy, to the thesis "Seismic Performance of Masonry Cross Vaults: Learning from historical developments and experimental testing", supervised by Paulo B. Lourenço, 2020.

Second Best Paper Award

Second Best Paper Award 2017 for the journal Buildings, with the paper "Rocking and Kinematic Approaches for Rigid Block Analysis of Masonry Walls: State of the Art and Recent Developments" from Casapulla, C., Giresini, L., Lourenço, P.B., in 2020.

Commendation Merit

"Commendation Merit" of The HKIE Structural Division Excellence Award 2020 (SEA) in the paper "Deformation Analysis of Fibre-Reinforced Polymer Reinforced Concrete Beams by Tension-Stiffening Approach" published in the Composite Structures Journal, 234(15), 111664, February 2020, P.L. Ng, J. Barros, G. Kaklauskas, J.Y.K Lam, in the condition of a Awarded Papers of SEA, it was published on The HKIE Structural Division Annual Report 2019/2020.

SCIENTIFIC LEADERSHIP

President of iisBE

The International Initiative for a Sustainable Built Environment is a worldwide network committed to develop and innovate solutions to improve the sustainability of the built environment.

Member of the Project Team of the WG4.T2

Team of 6 members in charge of Phase 3 - WG4.T2 Design of Fibre-Polymers Composite Structures - Preparation of CEN TS (drafting towards of the corresponding structural Eurocode).

Convener of the fib WP2.4.1 - Modelling of Fibre Reinforced Concrete Structures

Task group of fib organization dedicated to the design of fibre reinforced concrete structures by using computer programs based on the finite element method.

AWARDS AND SCIENTIFIC DISTINCTIONS

Angelo Gaetani - Best Doctoral Dissertation Award in 2016, for Angelo Gaetani attributed by University of Rome La Sapienza, Italy to the thesis "Seismic Performance of Masonry Cross Vaults: Learning from historical developments and experimental testing", supervised by Paulo B. Lourenço, 2020.

E.R. Teixeira - IconSWM-CE Award – 2020 for Excellent Presentation, presented to E.R. Teixeira, for the presentation of paper entitled, "Reduction of construction and demolition wastes with its reuse in different construction scenarios" in 10th International Conference on Sustainable Waste Management towards Circular Economy.

Claudia Casapulla, Linda Giresini, Paulo B. Lourenço - Second Best Paper Award 2017 for the journal Buildings, with the paper "Rocking and Kinematic Approaches for Rigid Block Analysis of Masonry Walls: State of the Art and Recent Developments" from Casapulla, C., Giresini, L., Lourenço, P.B., 2020.

Pui Lam Ng, Joaquim Barros, Gintaris Kaklauskas, Jeffery Yuet Kee Lam - "Commendation Merit" of The HKIE Structural Division Excellence Award 2020 (SEA) in the paper "Deformation Analysis of Fibre-Reinforced Polymer Reinforced Concrete Beams by Tension-Stiffening Approach" published in the Composite Structures Journal, 234(15), 111664, February 2020, in the condition of a Awarded Papers of SEA, it was published on The HKIE Structural Division Annual Report 2019/2020.

José Ferreira - Best MSc Dissertation in Engineering in the 3rd Portuguese Congress on BIM, awarded to José Ferreira for the thesis entitled "Ensaio virtuais à rotura em estruturas de betão armado com base em modelos BIM", supervised by Miguel Azenha, 2020.

HIGH-ASSURANCE SOFTWARE LABORATORY



José Nuno Oliveira

Director

The High-Assurance Software Laboratory (HASLab) was founded in early 2011 by researchers at the Department of Informatics of the School of Engineering, of which it is currently a Research Unit. Briefly after its creation, HASLab joined the Institute for Systems and Computer Engineering - Technology and Science (INESC TEC), an Associated Laboratory with researchers from several higher education institutions in the north of Portugal. UMinho is currently one of the shareholders of INESC TEC, being HASLab the pole of INESC TEC at this university. In the last 2019 evaluation carried out by the National Science Foundation (FCT), INESC TEC was ranked as Very Good.

HASLab's mission is focused on the design and implementation of high-assurance software systems: software that is correct by design and resilient to environment faults and malicious attacks. HASLab accomplishes its mission by anchoring its research on a rigorous approach to three areas of computer science:

- Software Engineering, with a focus on the formal design of safety-critical systems, static and dynamic program analysis techniques, and formal methodologies for quantum computing.
- Distributed Systems, namely dependable data management for cloud computing and data science support, dissemination and aggregation protocols for very large geographically distributed systems, and programmable software-defined storage systems.
- Cryptography and Information Security, focusing on provable security and formal verification of cryptographic protocols, efficient and secure implementation of cryptographic software, and privacy-enhancing technologies.

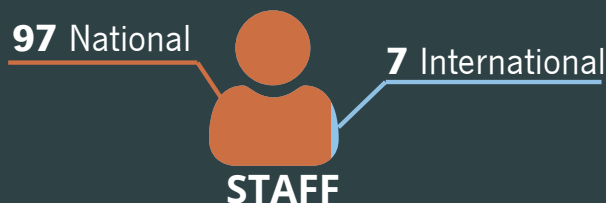
Most HASLab members collaborate regularly with key national and international research Centres and ICT companies. These collaborations occur mainly in the context of European and consultancy projects, that constitute the main revenue sources of the Centre. The strategy for the Centre evolution, in particular to attract top post graduate students, is also anchored in these connections. The Centre is currently focusing on improving its prototype-level software development tools to production-level open-source tools, targeting a significant user-base and high profile applications. These will enable the Centre to consolidate and establish new long term technology transfer collaborations with international giants in ICT, and thus ensure the real-world impact and visibility of its research.



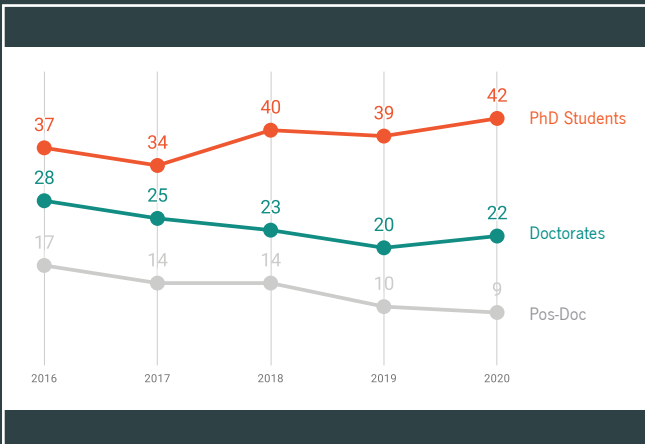
Manuel Alcino Cunha
Vice-director



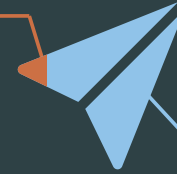
PHD FULL MEMBERS



PHD EVOLUTION



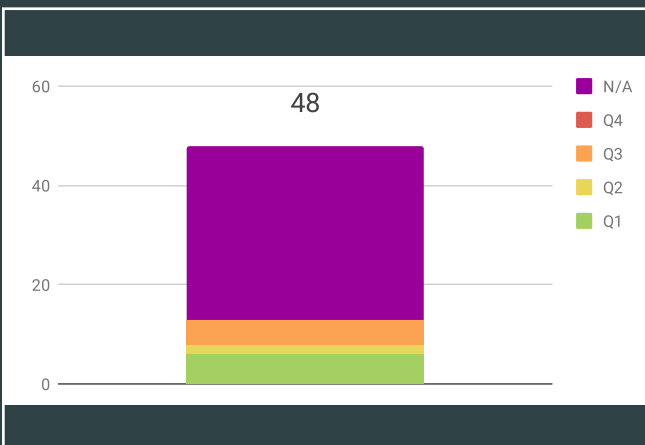
2 Completed



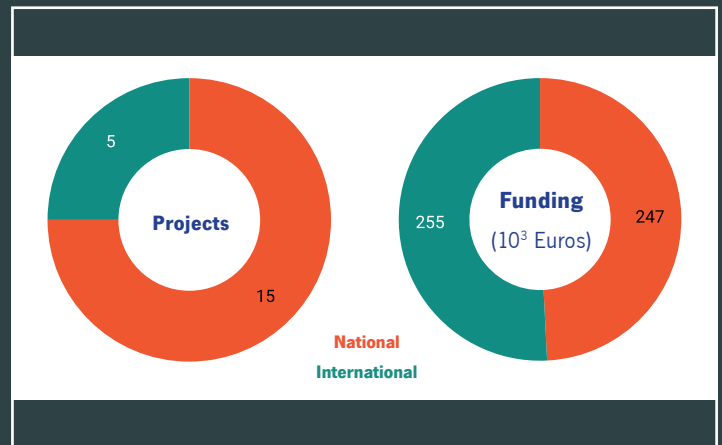
22 On-going

PHD THESIS

NO. OF PUBLICATIONS IN INDEXED JOURNALS



RESEARCH PROJECTS AND FUNDING



FLAGSHIP PUBLICATIONS

The Last Mile: High-Assurance and High-Speed Cryptographic Implementations

Almeida, J.B., Barbosa, M., Barthe, G., Grégoire, B. IEEE Symposium on Security and Privacy (SP), 2020

A Survey and Classification of Software-Defined Storage Systems

Macedo, R., Paulo, J., Pereira, J., Bessani, A. ACM Computing Surveys, 2020

SPELLing out energy leaks: Aiding developers locate energy inefficient code

Pereira, R., Carção, T., Couto, M., Cunha, J., Fernandes, J. P., Saraiva, J. Journal of Systems and Software, 2020

Supporting the Analysis of Safety Critical User Interfaces: An Exploration of Three Formal Tools

Campos, J.C., Fayollas C., Harrison, M.H., Martinie, C., Masci, P., Palanque, P.A. ACM Transactions on Computer-Human Interaction, 2020

GenoDedup: Similarity-Based Deduplication and Delta-Encoding for Genome Sequencing Data

Cogo, V. V., Paulo, J., Bessani, A. IEEE Transactions on Computers, 2020

3RD CYCLE



**Jorge Miguel Matos
Sousa Pinto**
Director

COMPUTER SCIENCE (MAP-I)

Taught in collaboration with:
Universities of Aveiro and Porto



**Paulo Jorge Freitas
Oliveira Novais**
Director

INFORMATICS

EVENTS

- Fujitsu Digital Annealer Workshop - Quantum Inspired Computing
- Measuring Icebergs: Using Different Methods to Estimate the Number of COVID-19 Cases in Portugal and Spain
- GenoDedup: Similarity-Based Deduplication and Delta-Encoding for Genome Sequencing Data
- Verification of system-wide safety properties of ROS applications
- Flow-based Detection and Proxy-based Evasion of Encrypted Malware C2 Traffic
- Type Your Matrices for Great Good
- MAP-i Seminar - Visit to Research Centers
- The science behind the STAYAWAY COVID app - The Best Student at UMinho 2020

FLAGSHIP PROJECTS

InterConnect - Interoperable Solutions Connecting Smart Homes, Buildings and Grids

InterConnect is developing solutions for smart homes, building and the smart grid, focusing in the interoperability of IoT digital services, platforms and devices via a SAREF interface, focusing on IoT data process and privacy. This H2020 project ends in 2023.

IDMobile - Mobile Digital Identity

It aims to develop a solution for issuing digital identification documents that people can use via mobile devices, based on decentralised infrastructures and advanced biometrics - supported by behavioural biometrics, in accordance with GDPR and eIDAS.

STAYAWAY COVID APP

STAYAWAY COVID is an application that runs on iOS and Android mobile phones and is intended to support the country in its efforts to screen for COVID-19. In a simple, safe and private way, the app informs each user about high-risk exposure to the disease, through the monitoring of recent contacts. The application is voluntary and free to use, and it does not access the users' identity or personal data at any time.

AWARDS AND SCIENTIFIC DISTINCTIONS

José Manuel Valença - Title of Emeritus Professor of the University of Minho

COLLABORATION WITH OTHER RESEARCH CENTRES / COLABS

Germany - Julius-Maximilians Universität Würzburg; Technische Universität München; Technische Universität Kaiserslautern
Belgium - Katholieke Universiteit Leuven; UC Louvain
Spain - IMDEA Software Institute; Universidad Politécnica de Madrid
USA - MIT Computer Science and Artificial Intelligence Laboratory; Carnegie Mellon University; University of Texas at Austin
France - INRIA; Sorbonne Université
Japan - National Institute of Informatics
Netherlands - Radboud University Nijmegen
Portugal - NOVALINCS; Universidade de Coimbra
UK - Queen Mary University of London; University of Bristol; University of Newcastle
Switzerland - Université de Neuchâtel
Germany - Cloud&Heat
Brazil - Instituto de Aeronáutica e Espaço; Instituto Tecnológico de Aeronáutica
Estonia - Cybernetica

Spain - LeanXcale
USA - Texas Advanced Computing Center; Oracle; U.S. Food & Drug Administration
France - ONERA, Atos, Scalify
Greece - IKEA
Netherlands - MonetDB
Portugal - Mobileum; Wavocom; Laboratório de Instrumentação e Física Experimental de Partículas; Efacec; FCT / FCCN; Imprensa Nacional Casa da Moeda
ICT COST Action IC1405 - Reversible computation - extending horizons of computing
FME Association - Formal Methods Europe Association
Working Group 2.1 - Algorithmic Languages and Calculi
Working Group 2.7/13.4 - User Interface Engineering
Working Group 1.3 - Foundations of System Specification
IFIP Technical Committee 1 on Foundations of Computer Science

SCIENTIFIC LEADERSHIP

HASLab researcher receives the title of Emeritus Professor of the University of Minho

José Manuel Valença, senior researcher at High-Assurance Software Laboratory (HASLab) and retired Full Professor at the UMinho School of Engineering, received the title of Emeritus Professor of said Institution.

Mobile applications developed at HASLab awarded by Exame Informática

The applications STAYAWAY COVID and Psicovida, both developed by HASLab researchers, received an honourable mention in the category "Application of the year", of the "Os Melhores do Portugal Tecnológico" awards, granted by Exame Informática magazine.

SCIENTIFIC RECOGNITION

Luís Soares Barbosa - Chair of the IFIP Technical Committee 1 - Foundations of Computer Science

The International Federation for Information Processing (IFIP) Technical Committee 1 - Foundations of Computer Science (IFIP TC1), an international committee that aims at the development of the theory and computer science and of its bridges with other domains of knowledge and socially relevant applications.

Rui Oliveira - Director of the Minho Advanced Computing Centre (MACC)

Minho Advanced Computing Centre (MACC) is a national infrastructure supporting Open Science initiatives on advanced computing, data science and visualisation. MACC offers supercomputing and data management services catering to scientific and industrial communities. It will host the EuroHPC JU supercomputer Deucalion.

José Creissac Campos - Steering Committee chair of ACM SIGCHI EICS

The ACM SIGCHI Engineering Interactive Computing Systems (EICS) conference is one of the most relevant international conferences devoted to all aspects of engineering usable and effective interactive computing systems.

CENTRE FOR SCIENCE AND TEXTILE TECHNOLOGY



Fernando Batista
Nunes Ferreira
Director

The Centre for Textile Science and Technology (2C2T) is a Research Unit established in 1978, working in the area of Fibrous Materials Engineering and Design.

The vision and mission of 2C2T is to be recognised for excellent research in this area, helping society to tackle the biggest and most pressing problems and providing the knowledge base for the continuing viability of the textile value chain for global competition. To accomplish this the Unit defined three strategic goals:

- 1) Scientific and technological leadership in the field together with a robust interaction research innovation, that will ensure continuing advances and will foster the development of novel materials and technologies, helping the industry to become more competitive, sustainable and improve human condition.
- 2) Excellent education with a strong research base through the incorporation of innovative attitudes and approaches to provide human resources with the competences needed to address current and future industrial and societal challenges.
- 3) Strong involvement with industrial partners exploring new opportunities addressed in the National and European strategies to strengthen the national economy and ensure that research outcomes are translated into benefits to society.

Three crosscutting research themes were identified key to generate knowledge and promote innovation to maintain European industrial leadership and economic growth: a) Nano and Multifunctional Materials; b) Sustainable and Advanced Processes and Technologies; c) Design and Product Engineering.

The research activity is organised in the Fibrous Materials Engineering group and the Fibre based Product Design group. The research goal of the Fibrous Materials Engineering group is mainly focused on the development of new materials and processes, including technology and process optimisation whereas the group of fibre based Product Design is more orientated to the development of fibre based products, considering the complete Product Life Cycle.

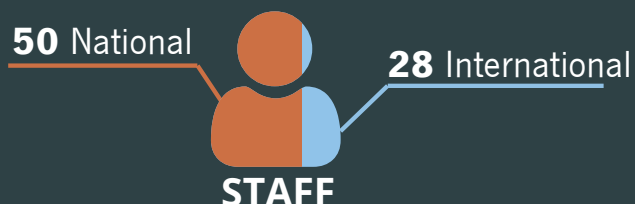
In the 2019 evaluation carried out by the National Science Foundation (FCT), 2C2T was awarded with the grade of Very Good.



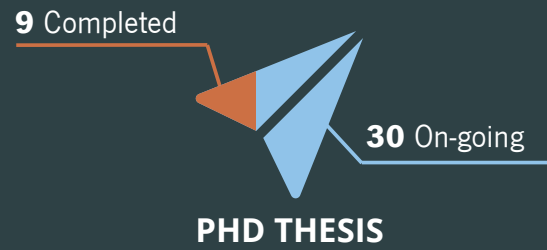
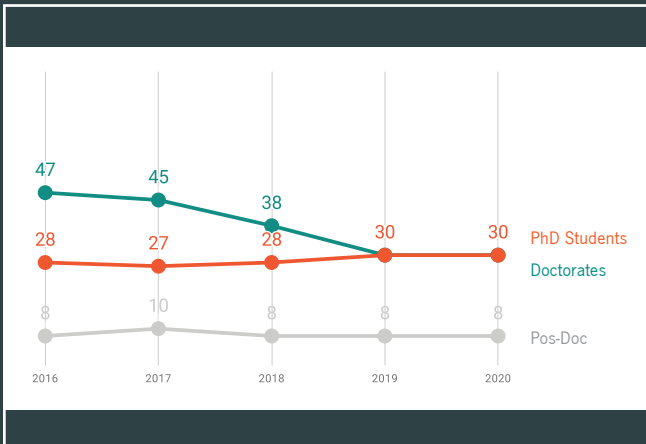
Ana Maria Moreira
Ferreira da Rocha
Vice-director



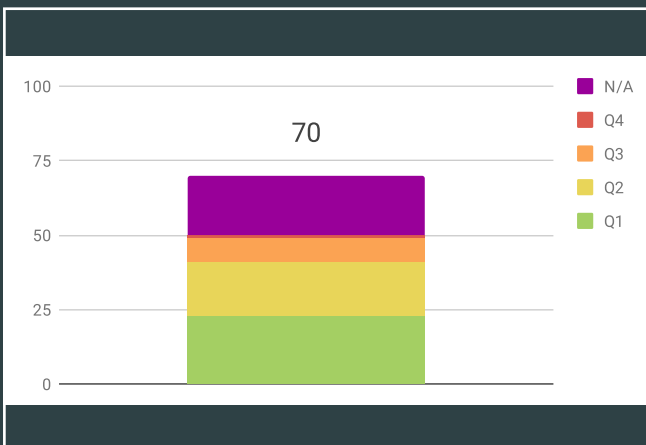
PHD FULL MEMBERS



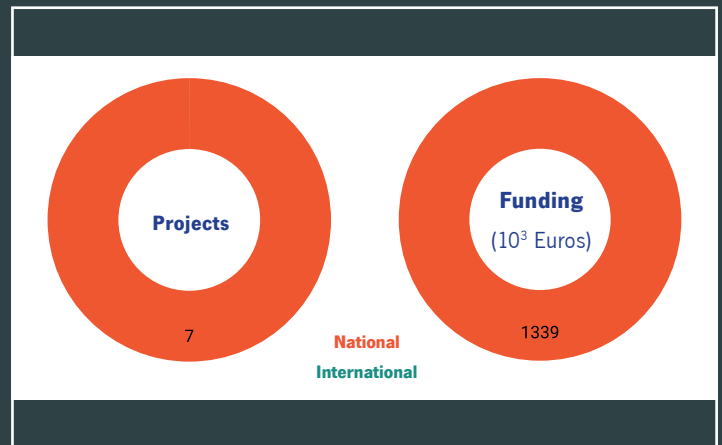
PHD EVOLUTION



NO. OF PUBLICATIONS IN INDEXED JOURNALS



RESEARCH PROJECTS AND FUNDING



FLAGSHIP PUBLICATIONS

In-situ synthesis of CaO and SiO₂ nanoparticles onto jute fabrics

Araújo, J, Ferreira, D, Teixeira, P, Figueiro, R. Cellulose, 2020

Vapor grown carbon nanofiber based cotton fabrics with negative thermoelectric power

Paleo, AJ, Vieira, EM, Wang, K, Bondarchuck, O, Cerqueira, MF, Bilotti, E, Melle-Franco, M, Rocha, AM, (2020). Cellulose, 27(15), 9091-9104, DOI: 10.1007/s10570-020-03391-4

Activity of specialized biomolecules against Gram-positive and Gram-negative bacteria

Tavares, TD, Antunes, JC, Padrão, J, Ribeiro, AI, Zille, A, Amorim, MT, Ferreira, F, Felgueiras, HP, Antibiotics, 2020, 9, 314

Aging effect on functionalized silver-based nanocoating braided coronary stents

Rebello, R, Padrão, J, Fernandes, MM, Carvalho, S, Henriques, M, Zille, A, Figueiro, R, Coatings, 10, 1234

3RD CYCLE



Fernando Batista
Nunes Ferreira
Director

TEXTILE ENGINEERING



Joana Luísa Ferreira
Lourenço Cunha
Director

FASHION DESIGN

Taught in collaboration with:
Universidade da Beira Interior

EVENTS

- AuxDefense2020 - 2nd World Conference on Advanced Materials for Defense, Online Edition, SBN: 978-989-54808-4-5.
- Materiais Avançados para a Defesa: Oportunidades 2030
- A (re)emergência das Fibras Naturais
- Biopolímeros: os novos Desafios e Oportunidades
- Fibrenamics Impulse #AtHome - (Re)Pensar o Futuro
- Nano Funcionalização de Materiais Fibrosos
- Materiais Fibrosos Avançados
- Workshop Internacional - Shaping the Future with Sustainable Materials – Opportunities after the Pandemic
- Materiais Ativos para Sensorização
- Design Circular de Produtos
- Novos Desafios da Arquitetura
- Business Talks 2020
- Mobilidade Sustentável
- Materiais Inteligentes para Smart Cities
- Casos de Estudo da Economia Circular

FLAGSHIP PROJECTS

nano2Prevent: Nanoparticles to mediate SARS-CoV-2 prevention

nano2Prevent project offers nanoparticles-based products to inactivate and detect the virus covid-19, thus stopping virus transmission within the community (collaboration with Requite and CITEVE).

SCIENTIFIC RECOGNITION

Honorable mention best poster

Auxdefense Conference 2020, Online Edition. "Electrospun smart material based on biodegradable polymer and graphene nanoplatelets for military applications", Paola Francavilla, Diana P. Ferreira(*) and Raúl Fangueiro, Online Edition.

Best Poster Award

Auxdefense Conference 2020, online edition, Thermal Camouflage Clothing in Diurnal and Nocturnal Environments, Catarina Pimenta, Raul Fangueiro

Best Poster Award

2nd Coatings and Interfaces Web Conference for the work on the modification of polymeric surfaces with the antimicrobial peptide LL37, Helena Felgueiras.

Best Poster Award

Granted at the 1st International Electronic Conference on Biomolecules: Natural and Bio-Inspired Therapeutics for Human Diseases for the study on the antibacterial activity of specialised biomolecules, Helena Felgueiras.

SCIENTIFIC LEADERSHIP

Gov 1

AUXDEFENSE 2020 - 2nd World Conference on Advanced Materials for Defense, online edition, 7/8 July 2020.

Gov 2

WANFR - World Association of Natural Fibers Research

Gov 3

Fibrenamics - International Platform on Advanced Fibrous Materials and Products

MECHANICAL ENGINEERING AND RESOURCE SUSTAINABILITY CENTER



José Carlos
Fernandes Teixeira
Director

The Mechanical Engineering and Resource Sustainability Centre (MEtRICs) was created in 2013 by joining researchers from the Mechanical Engineering Department at UMinho and the Department of Biomass Sciences and Technologies at the New University of Lisbon. In 2018, a partnership agreement with the Centre for Residue Valorisation – CVR, a non-profit R&D organisation based at UMinho was signed.

The MEtRICs mission is to create scientific knowledge and provide technical solutions for a cleaner, safer and sustainable world. MEtRICs is, at UMinho, the single research centre evaluated within the FCT's Mechanical Engineering panel, ranked in the last 2019 evaluation as Very Good. Although most of the research activities are at the frontier with environment issues, this identification avows Mechanical Engineering to be a core discipline for sustainable development. MEtRICs is part of the School of Engineering at UMinho and, therefore it is a key element of the education offer in graduate and post-graduate training and research provided to the region and the society.

The centre is organised in four research lines: Energy Conversion and Environment; Advanced Engineering Systems; Structures and Vehicle Engineering; Food Technology and Wellbeing.

MEtRICs has been collaborating with various scientific institutions from North and South America, Europe, Asia and North Africa. These extend to projects and advanced training. The extensive collaboration with other national research centres both in the University (MEMEMS, ALGORITMI, ISISE) and through the Nation: IST, IPB, IPP, FEUP, Centi, INL, should also be mentioned.

The centre is an active member in various networks: AEBIOM (European Biomass Association); FP7 technology platform "Renewable Heat and Cooling"; European Pellet Council founding member of WASTE CLUSTER PORTUGAL; platform Shared Waste Solutions (SWS); platform CTS - Centre of Technology and Systems; platform INTEROP-VLab; DYMAT – European association for the promotion of research into the dynamic behaviour of materials and its applications.

The strategy for the centre is based on: a) developing the network of collaborations with international partners; b) fostering the collaboration with industry; c) promoting a balance between fundamental research, applied technologies and dissemination; d) making scholarships available for the PhD programs; e) developing initiatives to promote the dissemination of scientific know how with the industry and community; f) participation in international networks; g) attracting high quality researchers; h) promoting inclusion within the institution.



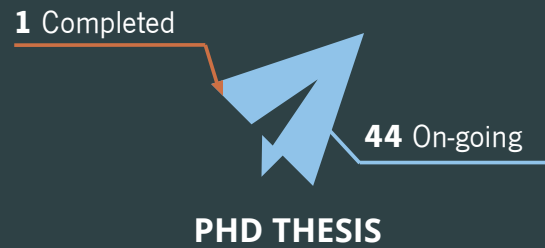
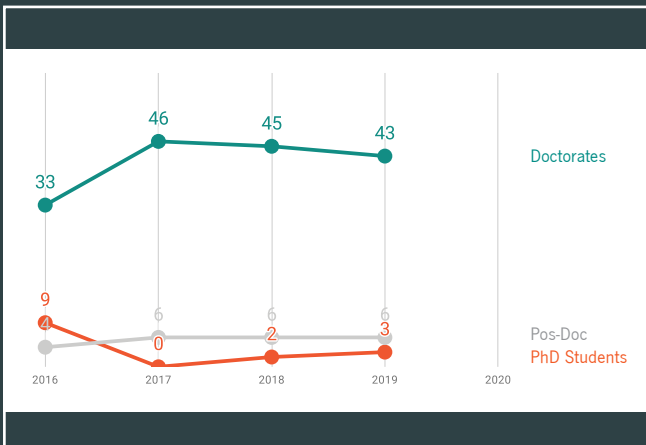
José Mendes
Machado
Vice-director

24

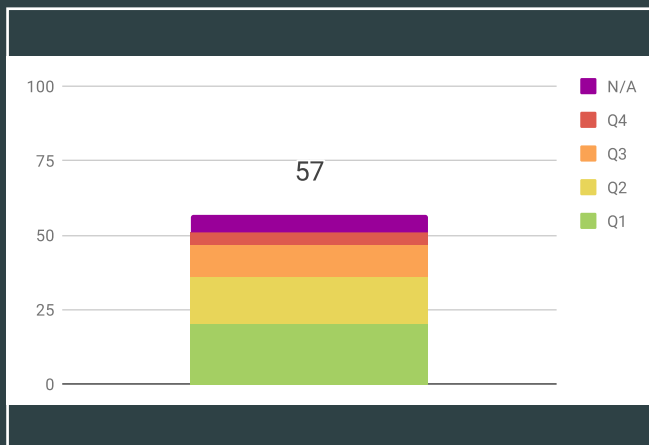
PHD FULL
MEMBERS

77 National
4 International
STAFF

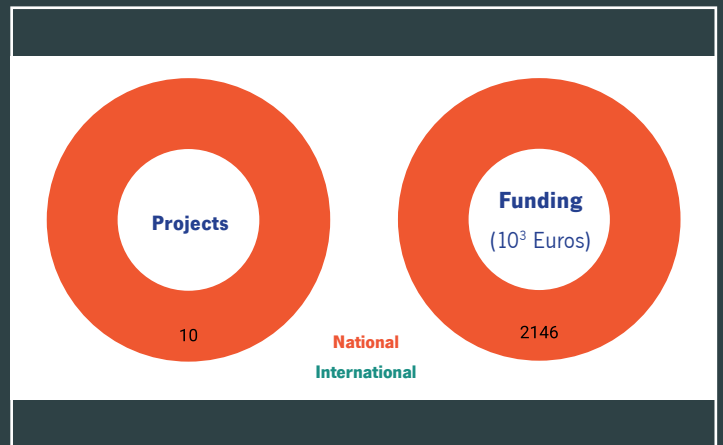
PHD EVOLUTION



NO. OF PUBLICATIONS IN INDEXED JOURNALS



RESEARCH PROJECTS AND FUNDING



FLAGSHIP PUBLICATIONS

Gasification of pellets produced from blends of biomass wastes and refuse derived fuel chars

Nobre, C., Longo, A., Vilarinho, C., Gonçalves, M. (2020), *Renewable Energy*, 154, 1294–1303, <https://doi.org/10.1016/j.renene.2020.03.077>

3D Manufacturing of Intracranial aneurysm biomodels for flow visualizations: a low-cost fabrication process

Souza, A.; Souza, M.S.; Pinho, D.; Agujetas, R.; Ferrera, C.; Lima, R.; Puga, H.; Ribeiro, J. (2020). *Mech. Res. Commun.*, 107, 103535. <http://dx.doi.org/10.1016/j.mechrescom.2020.103535>

Compact Automotive Thermoelectric Generator with Embedded Heat Pipes for Thermal Control

Pacheco, N; Brito, FP; Vieira, JJG; Martins, LASB; Gonçalves, LM (2020); *Energy*, 197 (2020) 117154; <https://doi.org/10.1016/j.energy.2020.117154>

Development of a system for supporting industrial management

Martins, S., Varela, M.L.R., Machado, J. (2020); *Lecture Notes in Mechanical Engineering*, pp. 209-215. https://doi.org/10.1007/978-3-030-22365-6_21

Assessment of the Stirling engine performance comparing two renewable energy sources: Solar energy and biomass

Ferreira, A.C., Silva, J., Teixeira, S., Teixeira, J. C., & Nebra, S. A. (2020). *Renewable Energy*, 154, 581–597. <https://doi.org/10.1016/j.renene.2020.03.020>

3RD CYCLE



**José Luís Carvalho
Alves**
Director

MECHANICAL ENGINEERING

Taught in collaboration with:
CMEMS



**Maria Cândida Lobo
Guerra Vilarinho**
Director

WASTE MANAGEMENT AND TREATMENT

Taught in collaboration with:
CTAC, MEtRICs, IPC and ISISE
Interdepartmental Education Project



**José Manuel Ferreira
Machado**
Director

BIOMEDICAL ENGINEERING

Taught in collaboration with:
ALGORITMI, 3B's, CEB, CMEMS
and MEtRICs
Interdepartmental Education Project



**Rui Alberto Madeira
Macedo Lima**
Director

LÍDERES PARA INDÚSTRIAS TECNOLÓGICAS

Taught in collaboration with:
ALGORITMI, 3B's, CEB, CMEMS
and MEtRICs
Interdepartmental Education Project

EVENTS

- 28th European Biomass Conference and Exhibition, e-EUBCE 2020, Bioeconomy's role in the post-pandemic economic recovery, Virtual,
- II Congresso Internacional Online das Engenharias - II CONNEG.ON, Engenharia do Futuro: Oportunidades e Caminho para uma Carreira Sólida, online, Organização: CONGRESS:ME, Brazil
- 2020 AAIC Webinar Series, virtual. Association for the Advancement of Industrial Crops (AAIC), Industrial Crops and Products
- Prevenção e Controlo de Legionella nos Sistemas de Água, Online, organized by CSO4/IPQ,
- Bioenergia em Portugal: Oportunidades e Desafios" Online, organized by Fernando Santos, BSS - Biorefinery Sustainable Solutions
- Non-Food Crops for European Marginal lands. Organized in the framework of the H2020 Projects, Magic and Panacea, in cooperation with Cooperativas agro-alimentares, Spain.
- Sustainable use of soil -Production and Degradation of Bio-based products, Organized in the framework of the H2020 Projects, Magic and Panacea, in cooperation with Greek-Bioeconomy Forum and CRES, Greece.
- Value Chain Event on Lignocellulosic Crops, Opportunities for the agriculture sector, Organized in the framework of the H2020 Projects, Magic and Panacea, with the collaboration of the Projects Becool, BFF, Bike, Forte, BioMagic and GRACE.

COLLABORATION WITH OTHER RESEARCH CENTRES / COLABS

Portugal - IST	Brazil - University of Bahia
Portugal - Instituto Politécnico de Bragança	Brazil - University of São Paulo
Portugal - Instituto Politécnico de Portalegre	Brazil - Federal University of ABC
Portugal - INL	East Timor - Universidade Nacional Timor
Portugal - CENTI	France - École Normale Supérieure de Cachan
Espanha - AVEBIOM, Valladolid	France - Université de Lorraine
Espanha - Cidaut, Valladolid	luxembourg - University of Luxembourg
Espanha - University of Extremadura	Japan - Tohoku University
Espanha - Universidade de Zaragoza	Japan - Osaka University
United Kingdom - Bristol University	Japan - Nagoya Institute of Technology
United Kingdom - Liverpool John Moores University	Italy - Università degli Studi di Catania
USA - MIT, Massachusetts	Sweden - Linköping University
USA - University of Texas at Austin	Tunisia - University of Sousse
Denmark - University Hohenheim	Poland - Silesian University of Technology
Denmark - Universität des Saarlandes	Vietnam - University of Transport and Communications, Ha Noi
Denmark - Jade University of Applied Sciences	

FLAGSHIP PROJECTS

ThermFire4Woven

The project led by the company Olbo & Mehler aims to develop advanced fibrous structures in surface treatments of the fibrous surface and coatings with high thermal efficiency and flame resistance for applications in fire curtains and battery support boxes.

NFCoolingSystem: An advanced microCooling System based on innovative NanoFluids and acoustic streaming

The NFCooling project aims at the development of nanofluids, based on magnetic nanoparticles, applied to advanced microchannel heat transfer systems, integrating piezoelectric elements for their long-term stabilization.

AmbWTE - Biomass & Waste to Energy System

The AmbWTE project aims to develop a combined cycle gasification system that can be fed with residual heterogeneous materials, comprising: a feedstock pretreatment unit, a gasifier, a boiler and a gas and effluents treatment plant.

SCIENTIFIC LEADERSHIP

Renewable Heat and Cooling - Steering Committee

A Plataforma Europeia de Tecnologia e Inovação em Aquecimento e Refrigeração Renováveis, visa desempenhar um papel decisivo na maximização de sinergias e no reforço dos esforços de investigação, desenvolvimento e inovação tecnológica que consolidarão a posição de liderança da Europa no sector.

Board member: ECOS, Inc

ECOS is a non profit organization, incorporated in the USA (San Diego), dedicated to the promotion of sustainable and efficient use of energy

INSTITUTE FOR POLYMERS AND COMPOSITES



Júlio César
Machado Viana
Director

The Institute for Polymers and Composites (IPC) is a Research Unit of the Engineering School of UMinho that aims at developing R&D activities in the field of Polymer Science and Engineering. In the 2019 evaluation carried out by the National Science Foundation (FCT), IPC was awarded with the grade of Very Good.

IPC main stated mission is to provide advancements on polymer and composites science and technology for social sustainable development; to generate added value to the polymer, mouldmaking and related industries and, in general, to the society, contributing to the socio-economic growth and to the social wellbeing; and to promote the society awareness of the role and importance of polymeric materials.

IPC is the unique national RU totally devoted to scientific and technological advancements in polymer and composite science and engineering. In this field, IPC adopts a multidisciplinary approach, covering and integrating the scientific disciplines of polymer chemistry, physics, engineering and technology. IPC develops basic research and integrative applied R&D into applications. IPC targets the promotion of scientific excellence and innovation, developing activities at the international leading edge, fostering breakthrough concepts and their practical exploitation.

IPC envisages contributing to the advancement of scientific knowledge in:

1. BASIC KNOWLEDGE R&D AREAS - Advanced materials; Advanced manufacturing technologies; Advanced engineering design.
2. INTEGRATIVE R&D AREAS - Integration of advanced materials Integrative manufacturing; Embedding functions into systems; Immersive engineering.
3. R&D APPLICATIONAL CHALLENGES - Polymers for advanced applications; Circular economy; Digital transformation.

IPC identified 3 main leading themes around which its activities are developed:

1. Sustainability and Eco-efficiency;
2. Smaller, Stronger, Smarter;
3. High-value manufacturing.



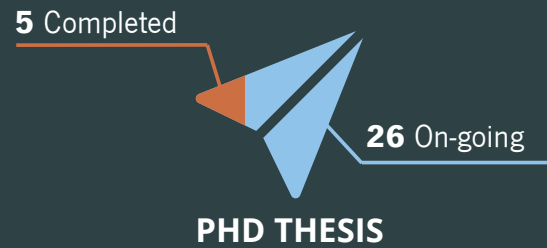
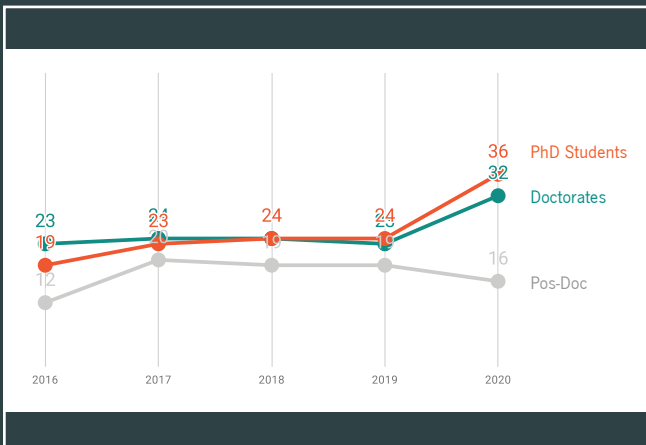
Ana Vera
Machado
Vice-director



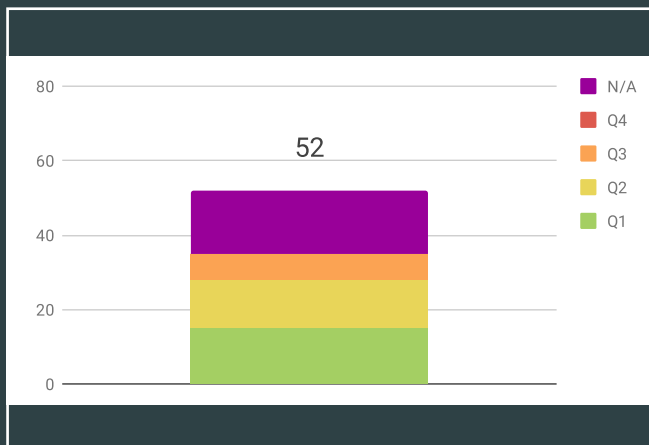
PHD FULL MEMBERS



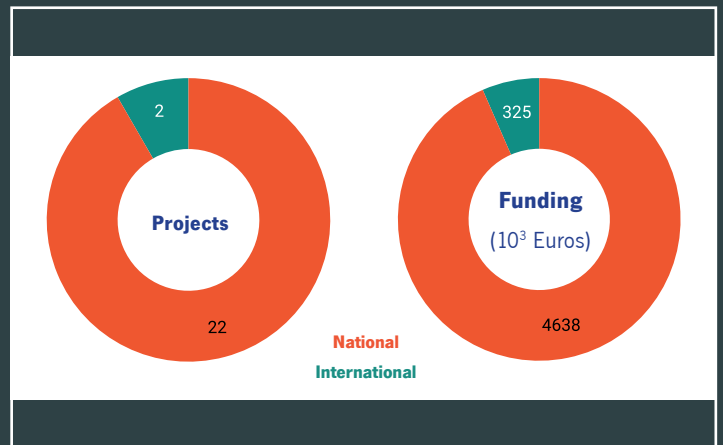
PHD EVOLUTION



NO. OF PUBLICATIONS IN INDEXED JOURNALS



RESEARCH PROJECTS AND FUNDING



FLAGSHIP PUBLICATIONS

Biodegradable polymer nanocomposites for ligament/tendon tissue engineering

M. Silva, F. N. Ferreira, N. M. Alves, M. C. Paiva, Biodegradable polymer nanocomposites for ligament/tendon tissue engineering, *Journal of Nanobiotechnology*

Bioinspired approaches for toughening of fibre reinforced polymer composites

Amorim, L., Santos, A.; Nunes, J. P. and Viana, J. C., Bioinspired approaches for toughening of fibre reinforced polymer composites, *Materials & Design*, <https://doi.org/10.1016/j.matdes.2020.109336>, Nov. 2020

Green synthesis of cellulose acetate from corncob: Physicochemical properties and assessment of environmental impacts

Araújo, D., Castro, M.C.R., Figueiredo, A., Vilarinho, M., Machado, A. Green synthesis of cellulose acetate from corncob: Physicochemical properties and assessment of environmental impacts. *Journal of Cleaner Production*, 2020, 260, 120865

Minimally processed date palm (*Phoenix dactylifera* L.) leaves as natural fillers and processing aids in poly(lactic acid) composites designed for the extrusion film blowing of thin packages

F. Kharrat, M. Khelif, L. Hilliou*, M. Haboussi, J.A. Covas, H. Nouri, C. Bradai. Minimally processed date palm (*Phoenix dactylifera* L.) leaves as natural fillers and processing aids in poly(lactic acid) composites designed for the extrusion film blowing of thin packages. (2020). *Industrial Crops and products*, 154: 112637. DOI:

Surface functionalization of 3D printed structures: Aesthetic and antibiofouling properties

José D Castro, E Carneiro, SM Marques, Bruno Figueiredo, Antonio J Pontes, Álvaro M Sampaio, Isabel Carvalho, Mariana Henriques, Paulo JS Cruz, S Carvalho, "Surface functionalization of 3D printed structures: Aesthetic and antibiofouling properties," *Surf. Coatings Technol.*, vol. 386, p. 125464, 2020

3RD CYCLE



João Pedro
Lourenço Gil Nunes
Director

SCIENCE AND ENGINEERING OF POLYMERS AND COMPOSITES



Ana Maria Pires
Pinto
Director

MATERIALS ENGINEERING

Taught in collaboration with:
CMEMS



Ana Maria Pires
Pinto
Director

ADVANCED MATERIALS AND PROCESSING



Maria Cândida Lobo
Guerra Vilarinho
Director

WASTE MANAGEMENT AND TREATMENT

Taught in collaboration with:
CTAC, MEtRICs, IPC and ISISE



Rui Alberto Madeira
Macedo Lima
Director

LEADERS FOR TECHNICAL INDUSTRIES



Júlio C. Viana
Director

DIRECT DIGITAL MANUFACTURING FOR THE POLYMERS AND MOLDS INDUSTRY

Taught in collaboration with:
Instituto Politécnico de Leiria
Joel Vasco (IPC/IPL)

EVENTS

- 1st International Symposium on Plastics Technology

FLAGSHIP PROJECTS

Better Plastics - Plastics in a Circular Economy

BETTER PLASTICS aims to ensure the sustainability of the new value chain in the plastics sector in Portugal, through the creation of an Innovation and R&D strategy in order to develop new materials, products, processes, systems, technologies and services, which respond to current and future challenges and ensure the circularity of Plastics in Portugal

Pack2Life - High Performance Packaging

High Performance Packaging emerged to solve an identified need for a new modular packaging that would adapt to different conditions of use such as transport, storage, or even exposure to public, while ensuring the maintenance of the organoleptic characteristics of the packaged fruit, and thereby increase the lifespan, especially in regarding to stone fruits due to their perishability. In this pursuit, research matters will also encompass mould design and production optimization aiming a single and reduced production cycle, while ensuring a competitive price.

Add.additive - Add Additive Manufacturing to Portuguese Industry

The project ADD.ADDITIVE - Add Additive Manufacturing to Portuguese Industry emerged with the purpose of generating knowledge to revolutionize the state-of-art of additive manufacturing. Expected achievements include breakthrough approaches in design for additive manufacturing (DfAM), development of new and improved materials, optimization of productive processes and methodologies, and creation of new approaches and trends, generating this way, a permanent and reverberating impact in the national economy.

SCIENTIFIC RECOGNITION

Prémio para o melhor artigo do ano de 2019 na revista "Ergonomics in Design.

Este prémio promovido pela The Human Factors and Ergonomics Society, foi atribuído ao artigo "Sampaio AM, Simões P, Arezes P, Pontes AJ. Hand-Product Contact Point Detection on Surgical Instruments – A User Evaluation. Ergonomics in Design. 2019;27(4):14-21. doi:10.1177/1064804619862677"

SCIENTIFIC LEADERSHIP

Polymers Journal, Editorial Board Member - Prof. José Covas

Applied Nano Journal, Editorial Board Member - Prof. José Covas

Board of Directors, Modest Society - Prof. José Covas

AWARDS AND SCIENTIFIC DISTINCTIONS

António Pontes - Award for the best article of the year 2019 in the journal "Ergonomics in Design. This award promoted by The Human Factors and Ergonomics Society



Universidade do Minho
Escola de Engenharia

Documento publicado pela Escola de Engenharia

ISSN versão Impressa: 2184-3694

ISSN versão Digital: 2184-3686

Coordenação

António Vicente

Conceção Gráfica e Paginação

Gabinete de Comunicação da EEUM

Ana Rodrigues

Diogo Cunha

Propriedade e Edição

Campus de Azurém

4804 - 533 Guimarães

Portugal

www.eng.uminho.pt