



UNIVERSITAT POLITÈCNICA DE CATALUNYA
BARCELONATECH
Barcelona School of Informatics

FIB

FIB Masters

Master in Data Science (MDS)

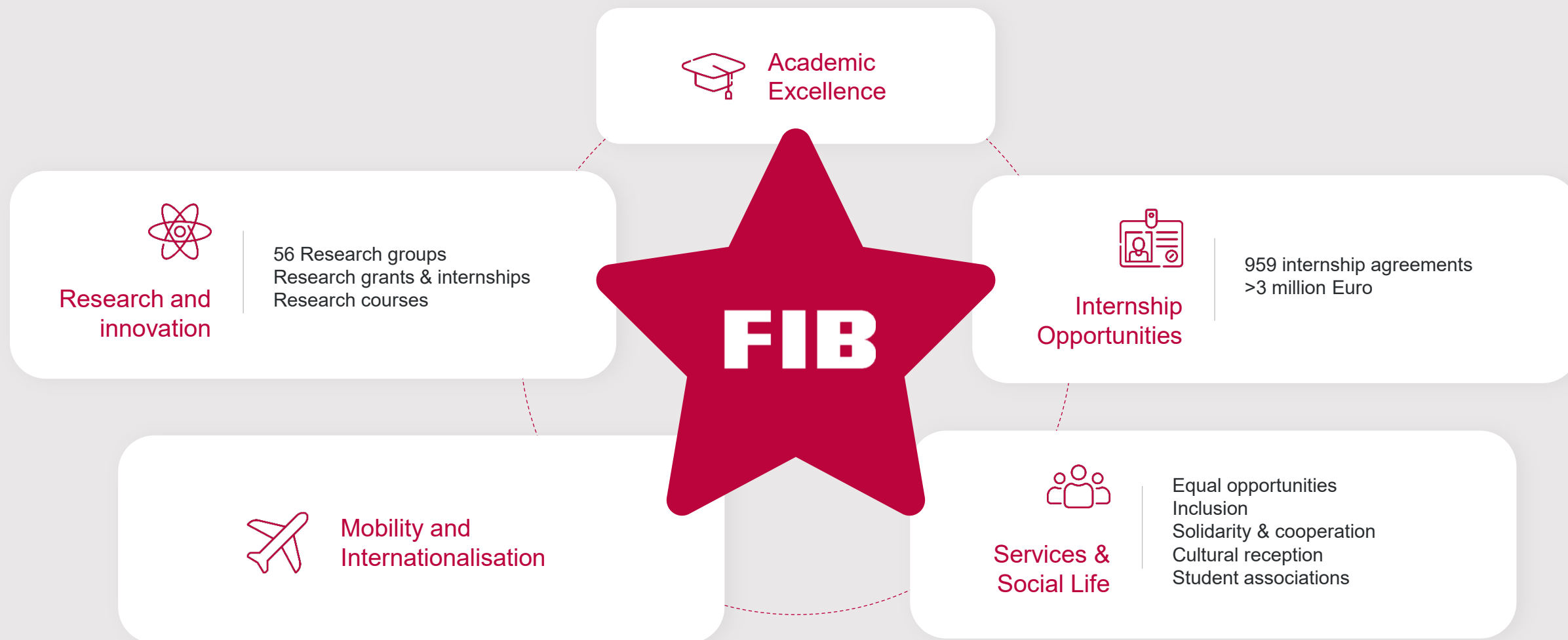
fib.info.masters@upc.edu

Oscar Romero

Vice dean of Postgraduate Studies



FIB Excellence



Barcelona School of Informatics

The leading center for Computer Science studies.



Top 10

Computer Science Schools in Europe

Equipped with the right resources, expert teaching staff, and years of experience, we offer a diverse array of high-value courses

Social impact: our graduates are top-tier professionals, in high demand by organizations driven by innovation and growth

A pioneering school in higher education that has spearheaded Catalonia's progress in this field

Leading the way since 1977

The FIB has been a benchmark centre since its inception in and the launch of its academic programmes in the 1976-1977 academic year

50 years of excellence in Bachelor's, Engineering, and Master's studies

As part of the UPC, we are responsible for the official degree programmes in Computer Engineering

Barcelona School of Informatics

The leading center for
Computer Science studies.



For more details, please visit our dedicated website: <https://www.fib.upc.edu/en/masters/master-data-science>, where you will find videos and slides from our general information session, as well as more detailed information about the school.



Data Drives the World!

EU Data Economy

- €500B+ value of the data economy (EU27)
- ~11 million data professionals (EU27)
 - ≈ 5% of workforce
- 7–8% annual growth (data economy)
- Significant skills gap persists
 - Hundreds of thousands of unfilled data/ICT roles

Data = core pillar of EU competitiveness & AI strategy

The OECD and the European Commission recently stated:

*“Big Data and Data Science are key pillars in the 21st century source of growth”
but they also remark “data-driven innovation is key for growth and well-being”*

sources: Organisation for Economic Co-operation and Development (OECD), European Commission (EC)
(Data Market Study, Data Act / Data Economy, Digital Skills & Jobs)



Why is Data So Relevant?

Data Science is instrumental

It enables the data-driven economy and is central to the acceleration and transformation of all sectors.

Health Care

Life Sciences

Mobility

Finance &
Insurance

Products &
Services

Public
Services

Industry 4.0

Energy

New sectors have emerged overriding the prevalence of traditional strategies: e-health, smart cities, smart spaces, e-banking, new videogame industry, industry 4.0, etc.

sources: European Commission (<https://data.europa.eu/en/highlights/size-and-trends-eu-data-economy>)

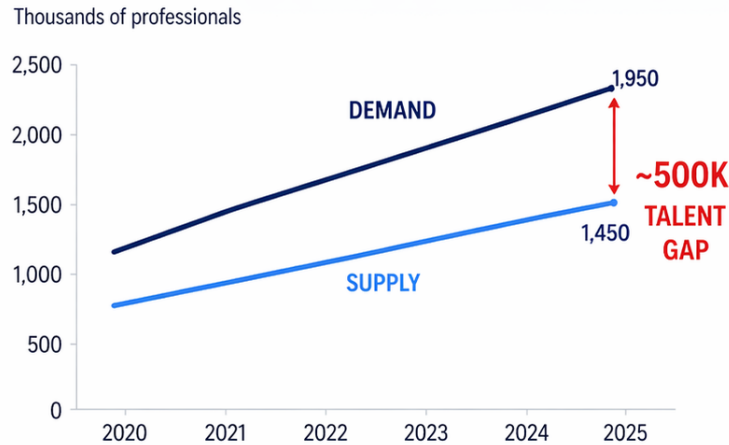


Shortage of Experts

THE DATA TALENT GAP IS GROWING

Demand for data professionals far outpaces supply

DEMAND VS. SUPPLY OF DATA PROFESSIONALS (EU27, 2025)



Unfilled data-related jobs represent ~5.7% of total demand
≈ 484,000 unfilled positions in 2025 (worst-case scenario)

Source: European Data Market Monitoring Tool, 2025 (European Commission)

WHY THE GAP EXISTS



Too few graduates with advanced data skills



Skills mismatch with industry needs



Rapid evolution of tools, AI and technologies



Global competition for talent

ALL SECTORS ARE COMPETING FOR DATA TALENT



HEALTHCARE



FINANCE



RETAIL & E-COMMERCE



MANUFACTURING & INDUSTRY



TRANSPORT & MOBILITY



ENERGY & UTILITIES



EDUCATION



AND MORE

Sources: European Data Market Monitoring Tool 2025; Eurostat; EURES Skills & Labour Shortages 2024

Shortage of Experts

The data talent gap is growing

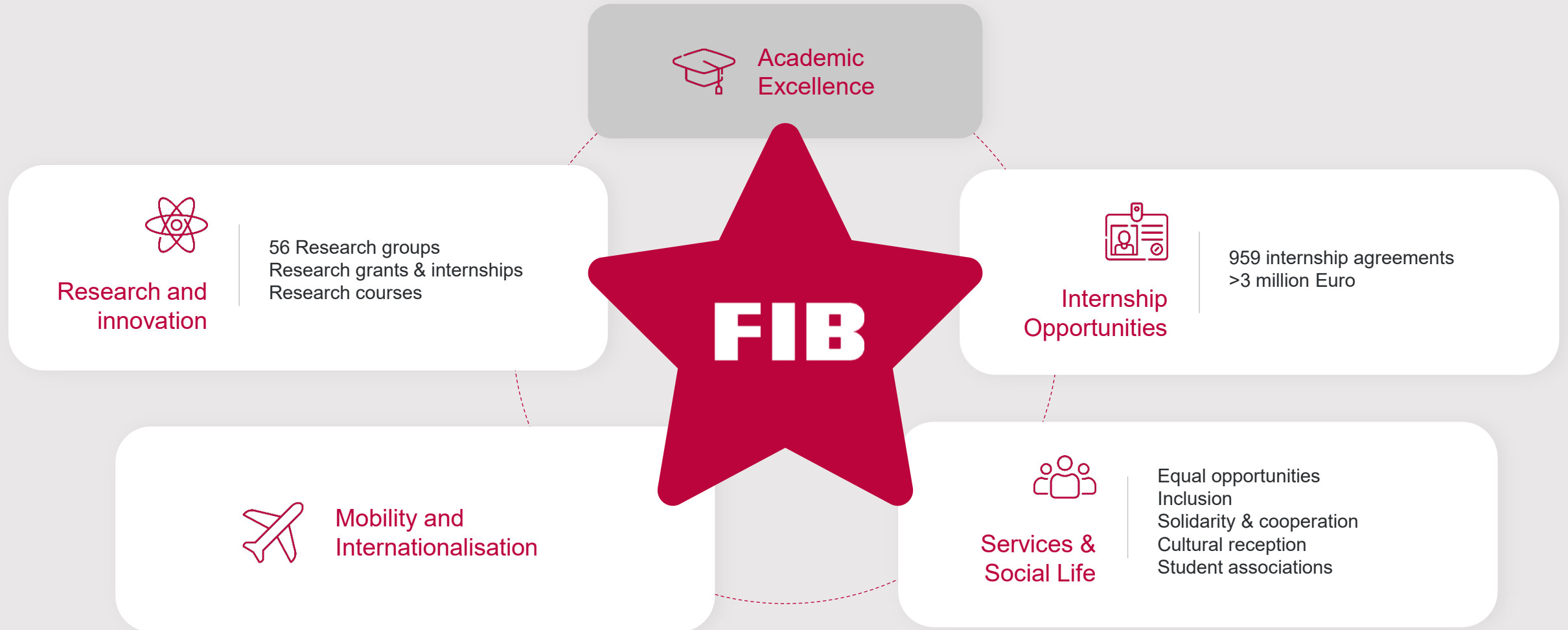
Current reports alert about the gap between demand and supply of skillful data scientists. Main reports blame the current rigid educative offer as main source of problems and demand



A data scientist must follow a multidisciplinary education covering all the relevant aspects of data science: data management, data analytics and basics on business aspects

Sources: European Commission, the Big Data Value Association (BDVA), the Quant Crunch Report (USA-based), Meta, Google and main data-driven companies

FIB Excellence



Master in Data Science

The Master in Data Science at FIB fosters students with a multidisciplinary education meeting the skills need to become a successful data scientist

Learning Outcomes

Manage the full data lifecycle (structured & unstructured data)
 Analyze, extract knowledge & visualize data from heterogeneous sources
 Design and implement end-to-end complex data-based systems
 Develop innovative data-driven solutions in real-world domains

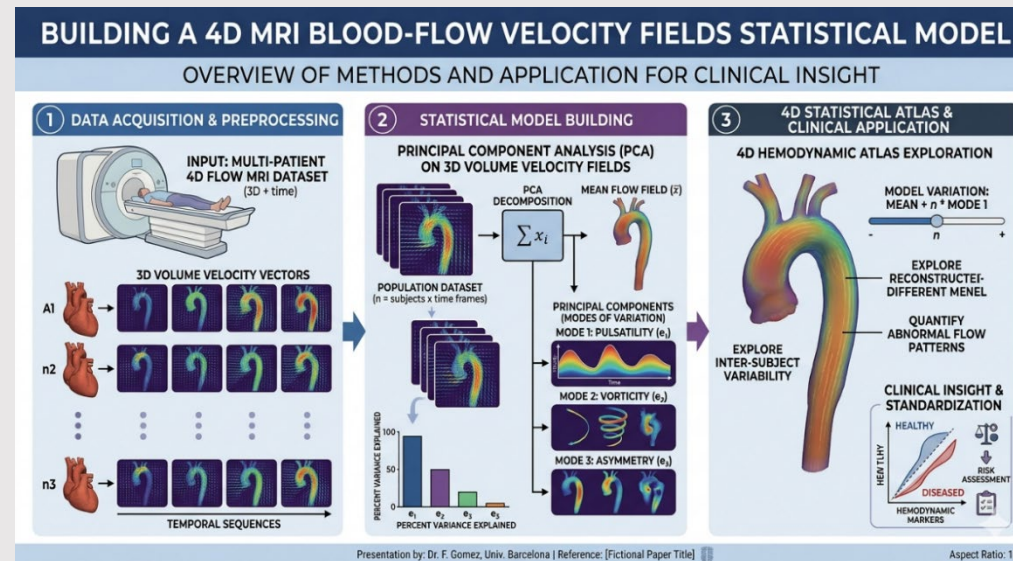


Exemplary Master Thesis

“Building a 4D MRI blood-flow velocity fields statistical model”

Hongping Feng

Cardiovascular disease is a major cause of death worldwide. The diagnosis and prognosis is traditionally based on morphology and function; hemodynamic behaviour influences pathogenesis but it is hardly included in current clinical workflow due to lack of insight and standardization. This project aims at building a 4D MRI blood-flow velocity fields statistical model with methods such as PCA on 3D volume dataset

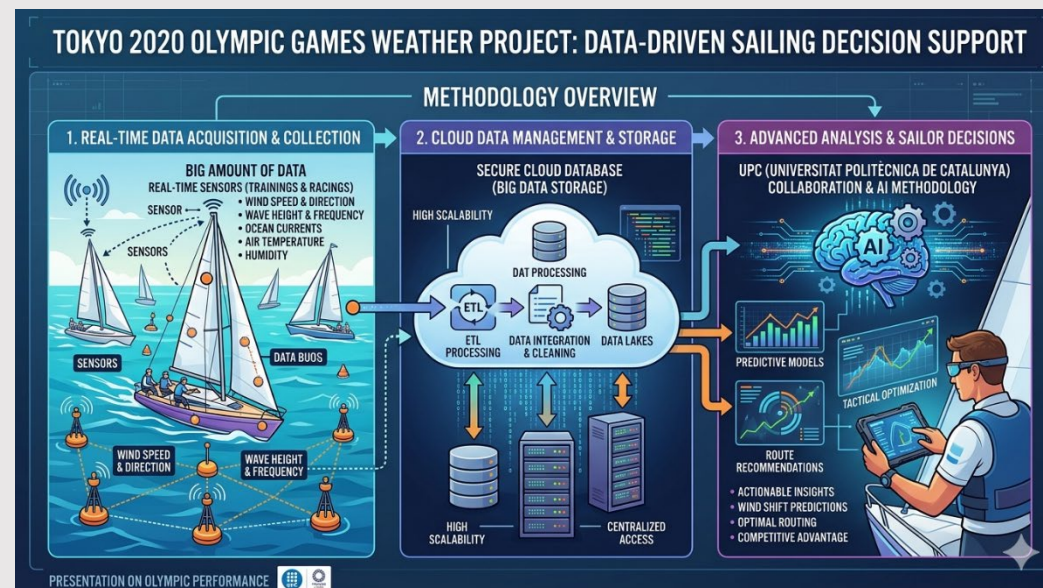


Exemplary Master Thesis

“Wind Pattern Analysis Applied to Coastal Areas”

Mouad Moussabbih

In the framework of the Tokyo 2020 Olympic Games Weather Project, a big amount of data have been and are currently collected on the sea through real time sensors during trainings and racings and are being stored into a cloud database. The collaboration with UPC is aimed at developing a data analysis methodology able to support sailors decisions during Olympic Games races

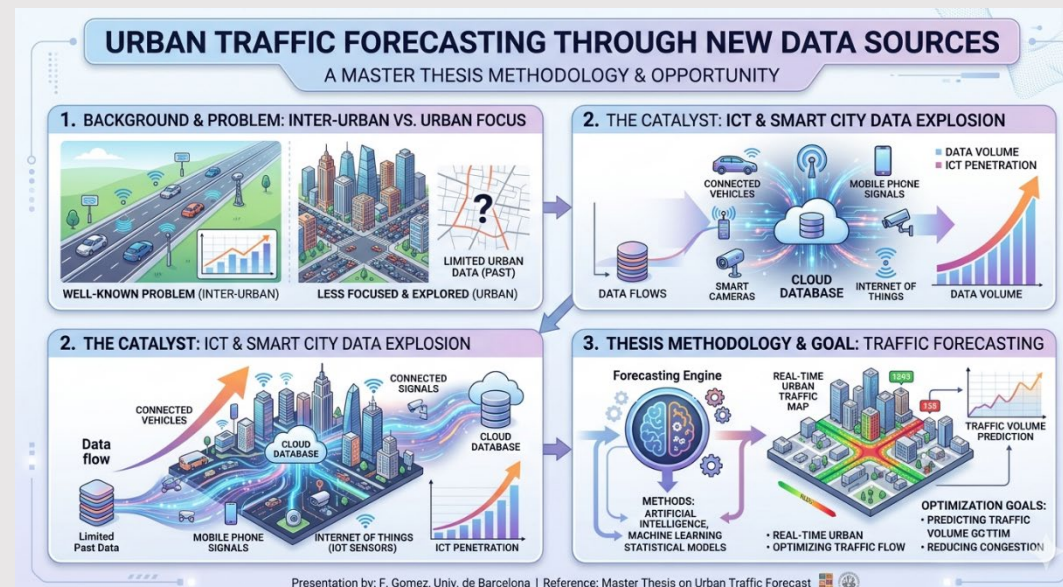


Exemplary Master Thesis

“Traffic Forecasting in Smart Cities”

Juan José Vázquez Giménez

For some time now, traffic forecasting has been a well-known problem in the inter-urban context. However, due to the limited amount of available data, researchers have been less focused on solving the problem in urban areas. Currently, we consider that the explosion of data due to increasing ICT (Information and Communications Technology) penetration in Smart Cities provides the suitable framework to exploit the potential of the forecasting methods. Thus, this master thesis will focus on the urban traffic forecast problem through the use of new data sources

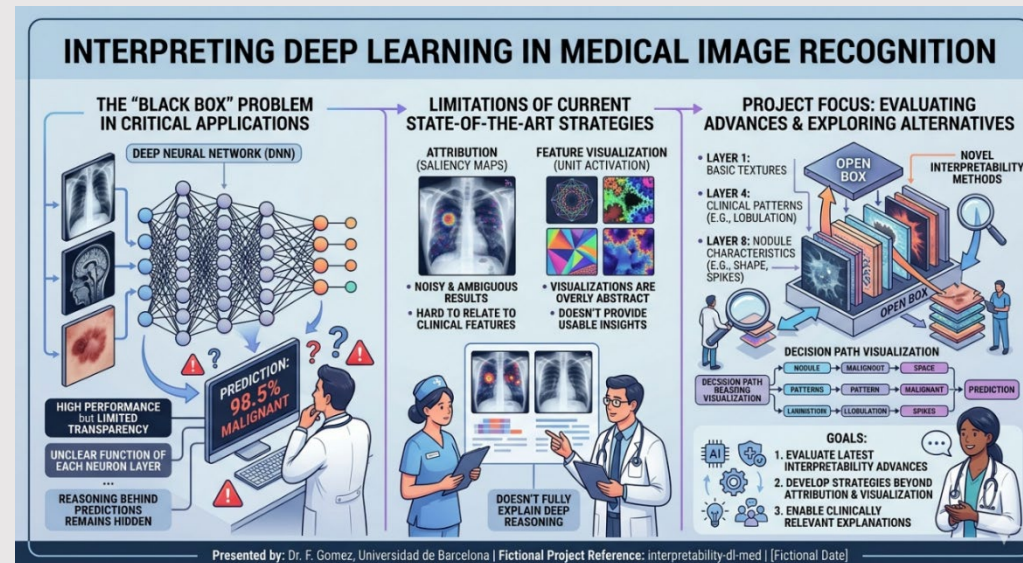


Exemplary Master Thesis

“On Explainability of Deep Neural Networks”

Álvaro Parafita

Deep Neural Networks have attained state-of-the-art performance in most Machine Learning fields during the recent years. However, it is still hard to ascertain what function each layer of neuron performs or the reasoning behind each prediction. This problem is especially relevant for sensitive applications, such as medical image recognition, where model interpretability is a definite requirement. This project will evaluate the latest advances in deep learning interpretability and aim to find alternatives to the current attribution and feature visualization strategies.

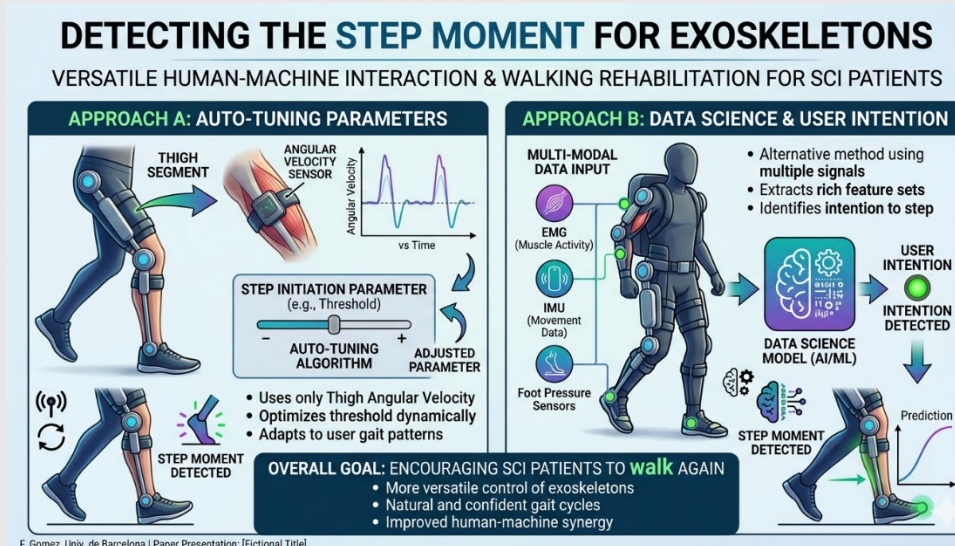


Exemplary Master Thesis

“Data Science Tools to Detect the Intention of the User to Perform a Step with a Lower-limb Robotic Exoskeleton”

Vicent Pérez Gregori

Detecting the step moment has a key role in providing a more versatile human-machine interaction encouraging patients suffering from spinal cord injuries to use these kinds of devices to walk again. This challenge has been faced using two approaches, one consisting in an autotuning of the step initiation parameter using the angular velocity signal of the thigh segment. The latter, based on finding an alternative method to detect the user's intention of performing a step using Data Science techniques



Learn. Then Lead

Around 60% of the students work or do research while studying

- Many of them in research centres / research groups
- Strong connections with companies in Barcelona (regular job offers)
- 100% of employability after the master
- Alumni spread all over the world

Strong internationalisation

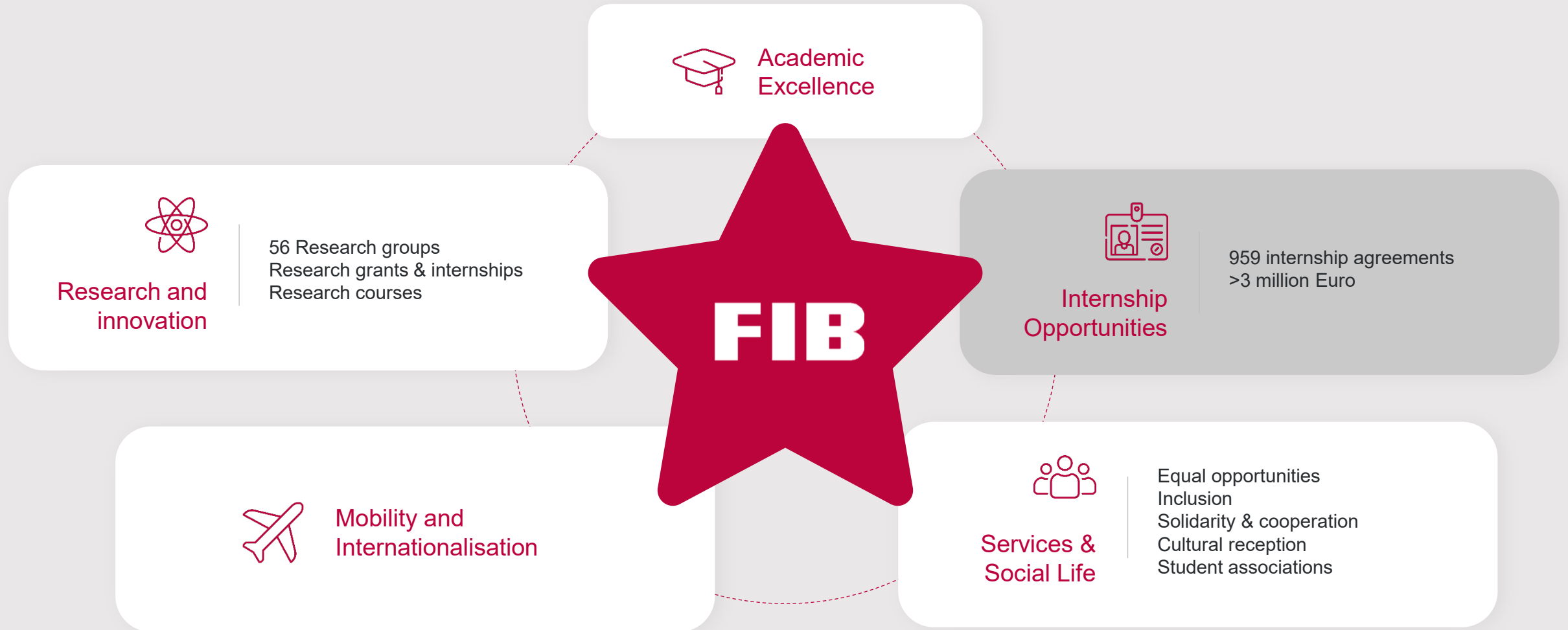
- Less than 40% of the students come from Barcelona or its area
- Around 30% of students involved in international mobility

Career Opportunities

- Data Scientist
- Data Analyst
- Machine Learning / AI Engineer
- (Chief) Data Officer
- Data Engineer
- Knowledge Engineer
- Data Architect
- Digital Transformation Leader
- Business Data Analyst
- Research Scientist (AI / Data)



FIB Excellence



Internships



Hour requirements

- ✓ Maximum per academic year: 1200 hours
- ✓ Master Thesis: 450 additional hours
- ✓ Company: minimum 11€ gross/hr
maximum 20€ gross/hr
- ✓ UPC: 8€ gross/hr



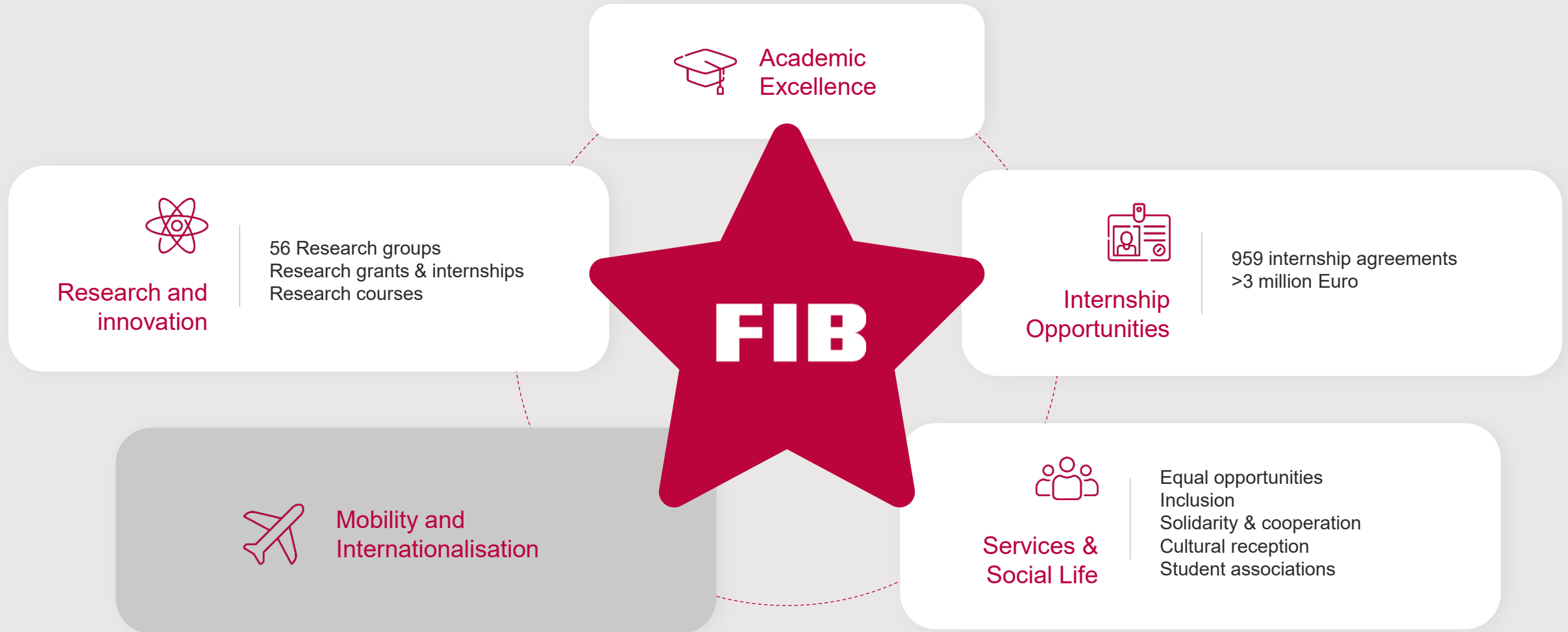
ECTS rate

- ✓ Master Thesis (30 ECTS)
- ✓ Master Thesis (Mod B or D; company
or company abroad)

30 hours = 1 ECTS



FIB Excellence



MOBILITY and INTERNATIONALISATION

138

Universities

43

Countries

4

Double Degrees

>200 requests including
bachelor and master
students for 2024/2025

#fibersworldwide

Università degli Studi di Padova

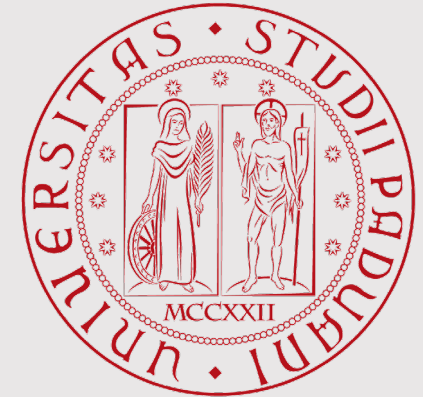
Università degli Studi di Padova

MDS (1st year, 60 ECTS)

- All mandatory courses + 6 ECTS of elective courses

Master of Science degree in Data Science (2nd year, 60 ECTS)

- 30 ECTS of courses + 15 ECTS master thesis + 15 ECTS internship



Grenoble INP – UGA Institute of Engineering and Management

MDS (1st year, 60 ECTS)

- All mandatory courses + 6 ECTS of elective courses

Grenoble INP – UGA

- 30 ECTS of courses + 30 ECTS of Master Thesis

Choose between two options:

Master of Science in Informatics at Grenoble (MoSIG)

Engineering specialization “Information Systems Engineering” (ISI)



Double Degrees

UniPD

Grenoble

GATECH

Illinois

GeorgiaTech

MDS (1st year, 60 ECTS)

- All mandatory courses (common and specialization)
- + 6 ECTS of elective courses

Master of Science in Computer Science (2nd year, 60 ECTS)

- First semester in Metz (GeorgiaTech Europe)
- Second semester in Atlanta



Double Degrees

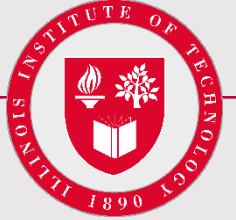
UniPD

Grenoble

GATECH

Illinois

Illinois Institute of Technology



MDS (1st year, 60 ECTS)

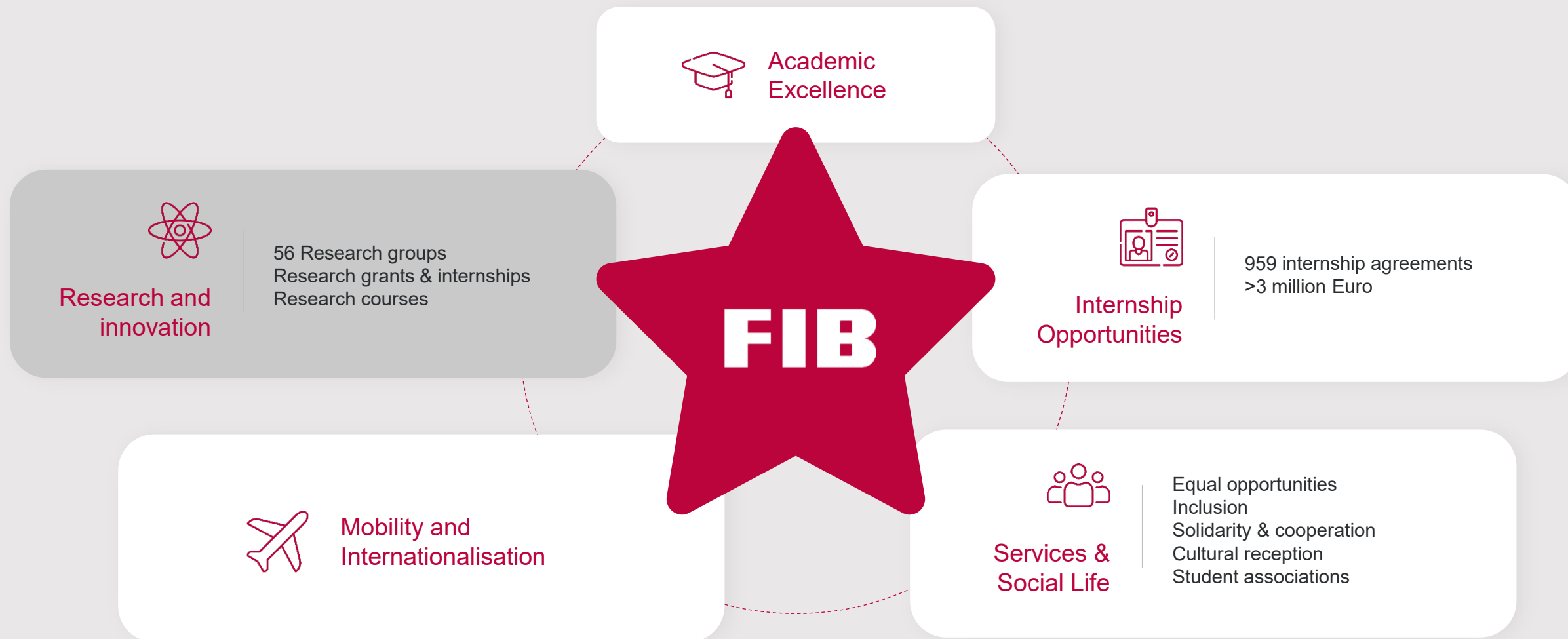
- All mandatory courses (common and specialization) + 6 ECTS of elective courses

Illinois Tech, 2nd year- 2 semesters (August-May, 60 ECTS, coursework + research)

- Industrial Agreements – Curricular Internships, Professional Experience (elective ECTS)



FIB Excellence



Research & Innovation



UPC, and FIB specifically, is a leading research institution.

- ✓ Top university obtaining Horizon Europe projects
- ✓ Start-ups, spin-offs, innovation and technology transfer

Our Research →



One strong aspect of our masters is that our teaching staff are also **researchers** with wide experience on the topics they teach.

- ✓ Belong to different departments and research group
- ✓ Have strong networks with researchers all over the world
- ✓ Courses on Introduction to Research



Our research groups belong to 8 transversal departments.

- Mathematics (MA)
- Business Administration (OE)
- Computer Architecture (AC)
- Physics (FIS)
- Services and Information Systems Engineering (ESSI)
- Computer Science (CS)
- Statistics and Operational Research (EIO)
- Systems Engineering, Automatic Control and Industrial Informatics (ESAI)



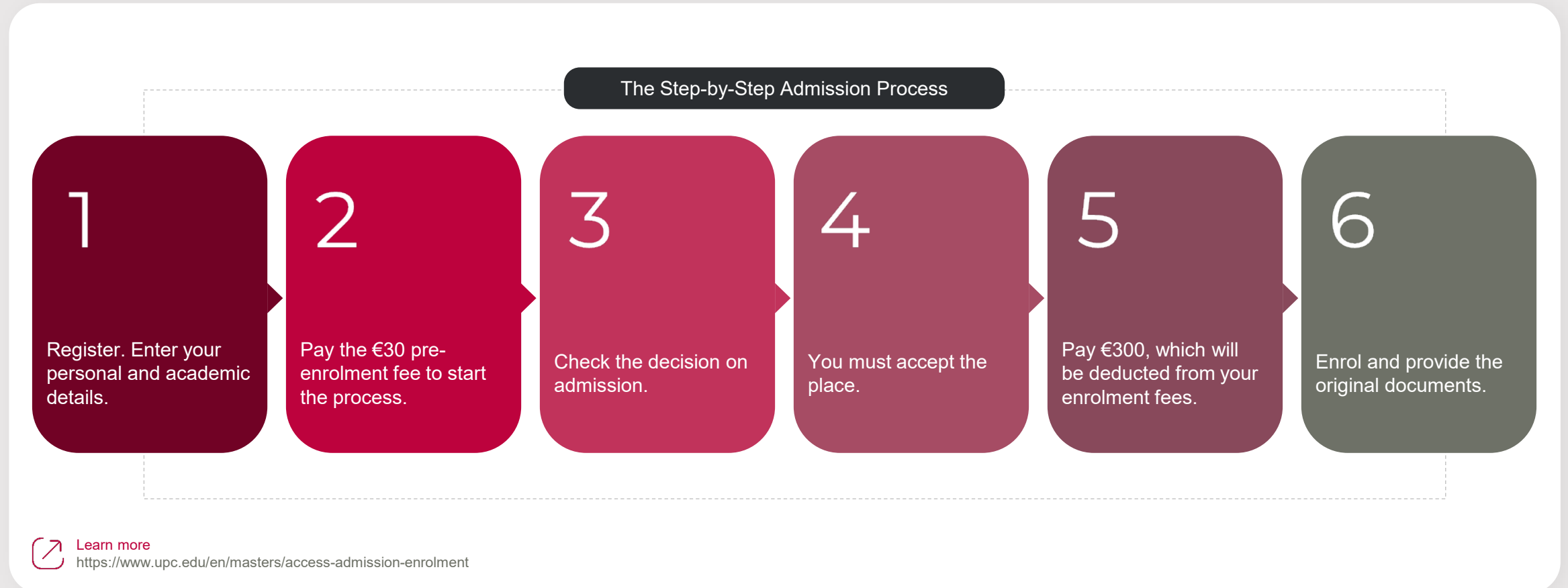
Barcelona Supercomputing Centre

Large flow of Master students



Procedure

Interested in one of our masters? This is the procedure to follow.



Important Dates



Admission: From 25th February to 29th May 2026



Two (three) admission periods:

First period:

- Deadline to apply: 17th April 2026
- Tentative admission notification: 30th April 2026

Second period:

- Deadline to apply: 29th May 2026
- Tentative admission notification: 19th June 2026

Third period:

- Not guaranteed, only if seats available
- Tentative deadline: 30th June 2026
- Tentative admission notification: 7th July 2026



Check the specific website of each master to know about its admission criteria:

<https://www.fib.upc.edu/en/masters>

Admission

01

Depending on your application date, your application will be evaluated during either the first or the second admission period.

02

Evaluation outcome:

Accept, Reject, Postpone (1st round) or Waiting list (2nd round)

Postponed applications get their final decision during the second period.
Waiting list applications are contacted in order if drop outs happen.
Rejected applications are not accepted to follow that program.

03

Accepted applications are contacted and informed about all relevant academic information as how to register, academic calendar, schedule of classes and exams, etc.

- All this information is already available at FIB Website.
- Before registration, you must pay 300€ (tax) to guarantee your place (later deduced from the registration cost).



Administrative and Academic Contacts

General

Information

✉ fib.info.masters@upc.edu

Specific Academic Questions

MDS

Anna Queralt

✉ anna.queralt@upc.edu

2025/2026 Prices

European Union (Resident) Applicants

- MDS: 19,37€ / ECTS

Non-European Union (Resident) Applicants

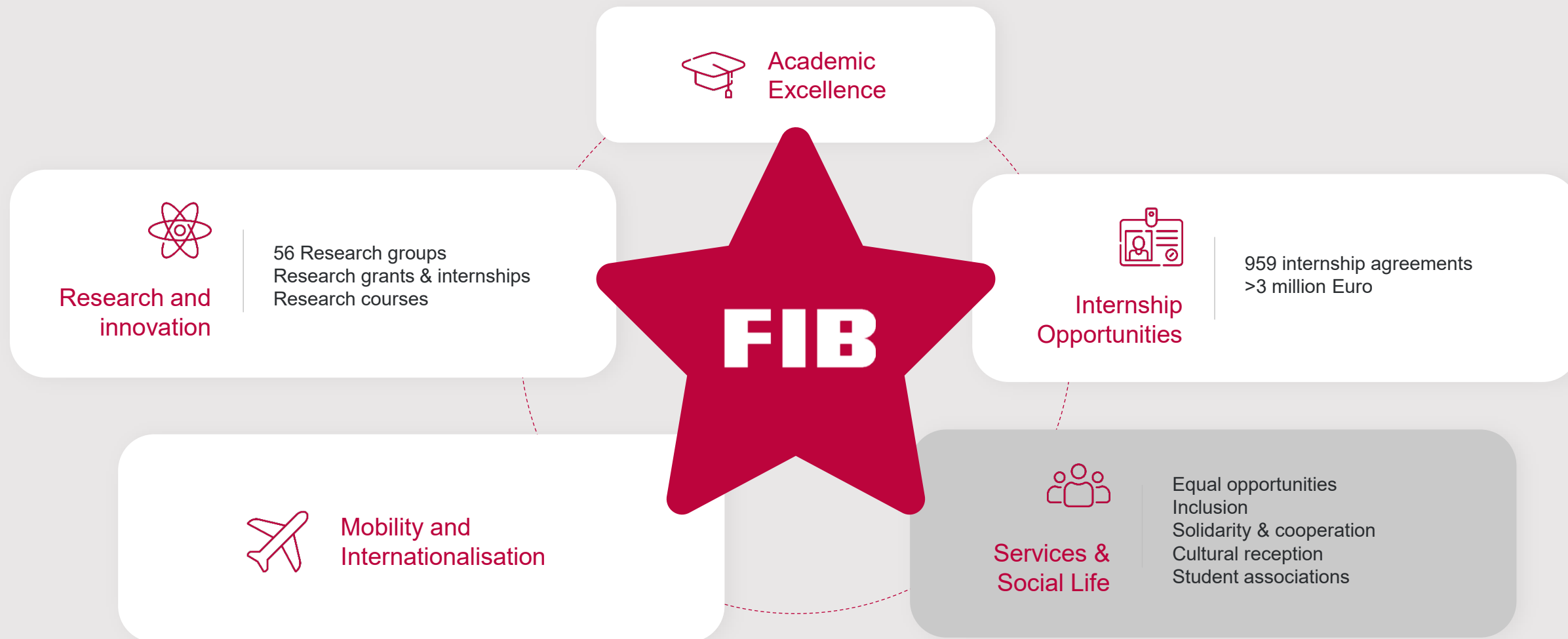
- MDS: 45€ / ECTS

Note:

Prices for 2026/2027 will be published in July. Once published, UPC list the prices here:
<https://www.upc.edu/en/masters/fees-grants>



FIB Excellence



Services

Equal Opportunities



- Bullying
- Gender Equality
- Transgender Community

Learn More →

Solidarity and Cooperation



Learn More →

Libraries



Learning Languages



Learn More →

Sports Club



Inclusion



- Learning Needs
- Teaching Support
- Psychologic orientation

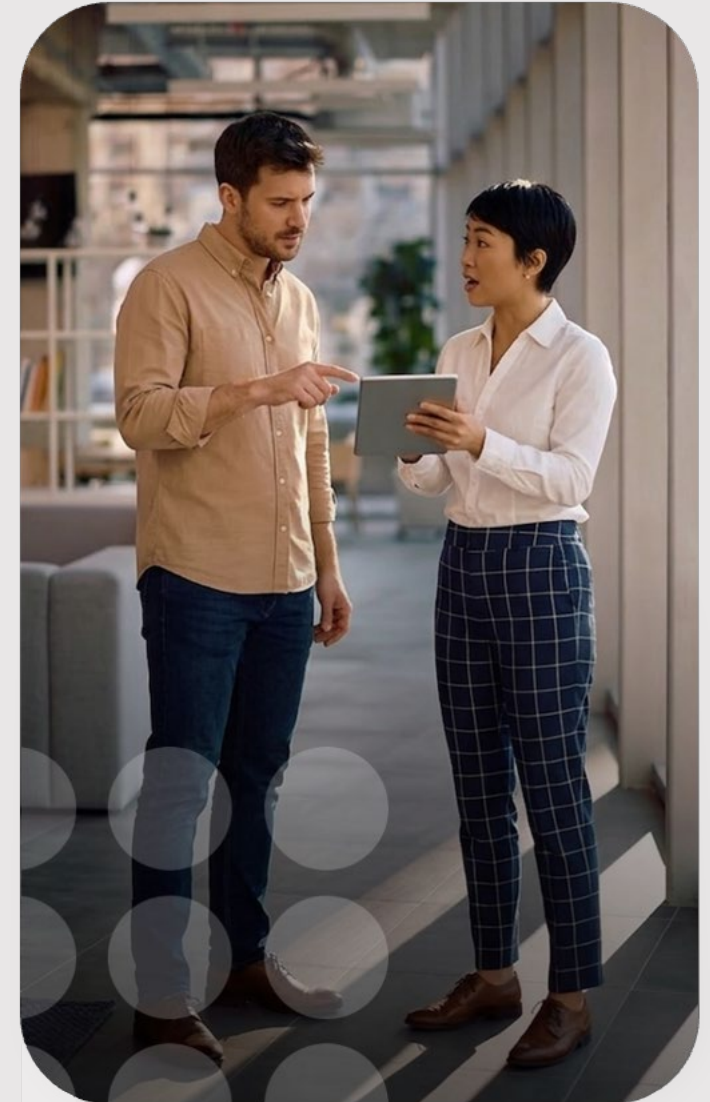
Learn More →

Cultural Reception



Learn More →

UPC Arts

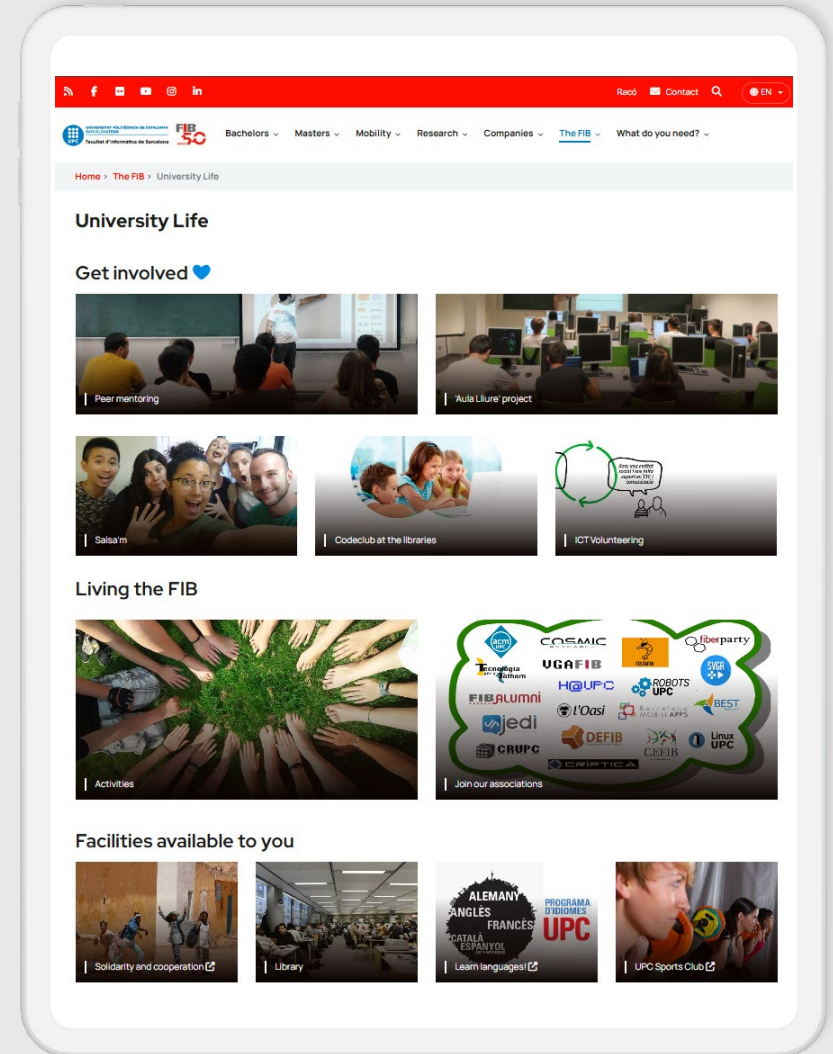



[Learn more
https://www.upc.edu/en/university-life-and-services](https://www.upc.edu/en/university-life-and-services)

University Life




[Learn more about FIB promoted social activities](#)

FAQs

FAQ

If I'm finishing my undergraduate studies this year, can I apply to a master?

Of course! You can be admitted. You only need to finish on time your registration in September. Indeed, if you finalize your bachelor thesis in October you can yet be admitted in our masters. Contact us for more details.

FAQ

Can I work and study at the same time?

Of course! there are several opportunities to do extracurricular practices in companies that, in turn, may help you to obtain elective ECTS for some of our masters.

FAQ

For new incoming students... what about enrolment?

Registration is online. If you require to hand in some documentation you can do it later, before the lectures start.



Do you have further
questions?

Do not hesitate to contact us at
fib.info.masters@upc.edu