Welcome to FIB Master’s Degree Informative Virtual Session

- Please, mute your micro
- Please, turn off your camera
- Only speaker will share screen to present

- Any question should be via chat but let’s do it at the end of the talk

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Master in Artificial Intelligence (MAI)

Master in Informatics Engineering (MEI)

Master in Informatics Engineering – Industrial Modality

Master in Innovation and Research in Informatics (MIRI)

Master in Data Science (MDS)

Màster per al Professorat de Secundària,

Master in Cybersecurity

Erasmus Mundus Master in Big Data Management and Analytics

More Master Information

Info.masters@fib.upc.edu

Daniel Jiménez-González
Vice-dean of Postgraduates Studies
FIB: graduate curricula

- **Coordinated by FIB:**
  - Màster en Enginyeria Informàtica (Spanish/Catalan) → MEI
    - (NEW) Màster en Enginyeria Informàtica Modalitat Empresa
  - Master in Innovation and Research in Informatics (English) → MIRI
  - Master in Data Science (English) → MDS
  - Interuniversity Master in Artificial Intelligence (English) → MAI
  - Màster de Formació per al Professorat de Secundària (Català/Castellà)

- **Participate:**
  - Master’s degree in Cybersecurity (2020/21 - English)
    - Interuniversity Master in Pure and Applied Logics
    - Interuniversity Master in Atomistic and Multiscale Computational Modelling in Physics, Chemistry and Biochemistry

- **ERASMUS MUNDUS:**
  
  Master Erasmus Mundus in Big Data Management and Analytics
Summary
Knowledge Areas – MAI/MIRI/MEI/MDS

- MAI
  - Advanced Computing, Algorithms
  - Computer Networks, Distributed Systems, Security
- MIRI
  - Supercomputing, Parallelism, Microprocessor Design
  - Computer Graphics, Virtual and Augmented Reality
- MEI
  - Artificial Intelligence
- MDS:
  - Data Science, Big Data Analytics
  - Management Business
  - Computer Networks, Distributed Systems, Security
I could start with the institutional part...

... but the important is what you would like to achieve/do/be...
All Achievements Begin as Dreams

... and our students make them real here!
Social and Technological Dreams

Health Goals

Hardware Design and Acceleration

3D Gaming Rendering in Real Time

Artificial Intelligence Applied

Programming Models Parallel Exploitation/Processor Design

Data Science/Big Data Analytics

TECHNOLOGY TRANSFER
RESEARCH + DEVELOPMENT + INNOVATION
Social and Technological Dreams

Health Goals

Artificial Intelligence Applied

3D Gaming Rendering in Real Time

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Hardware Design and Acceleration

Programming Models Parallel Exploitation/Processor Design

TECHNOLOGY TRANSFER
RESEARCH + DEVELOPMENT + INNOVATION

And of course! Any of your dream!
Master Thesis Examples

• **MIRI:**
  • *(CGVR)* Plausible reconstruction and rendering of semi-procedural landscapes. Oscar Argudo
  • *(CNDS)* Critical Analysis and Comparison of Data Protection Techniques for Genomics Data Sets. Daniel Naro
  • *(HPC)* Asynchronous runtime for task-based dataflow programming models. Jaume Bosch Pons
  • *(AC)* Machine Learning Techniques for resource prediction in nanoelectronic circuit design. Narcís Ricard

• **MEI:** Study of Deep Learning Algorithms Scalability in High Performance Computer Infrastructures. Francesc Sastre Cabot.

• **MAI:** Applying deep-learning techniques to detect freezing of gait episodes in Parkinson's disease patients. Julià Camps Sereix

• **MDS:** Computing and visualizing informative trajectories in temporally annotated data. Martí Zamora Casals (Under MIRI-DS)
MIRI-CGVR: Rendering for 3D Real Time – Games and Health!

- Plausible reconstruction and rendering of semi-procedural landscapes. **Author: Oscar Argudo. Grade: 10(MH)**

- Detail usually involves scanning again the area of interest with more accurate equipment or taking more samples per area.

- The acquisition process is expensive because it involves a substantial amount of time, human resources and expensive equipment.

- 3D real time reconstruction is possible using real information guidance.

Video ... Núria
MIRI-CGVR: Rendering for 3D Real Time – Games and Health!

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Video ... Núria
MIRI-CNDS: Security/Genomics

- Critical Analysis and Comparison of Data Protection Techniques for Genomics Data Sets. Author: Daniel Naro. **Grade: 10 (MH)**

- Genomic data is extremely sensitive by nature: it has intrinsic properties for individual identification, ancestry discovery, and disease prediction among others.

- Protection is needed for individual: DNA encrypted, access control, etc.

- File Format with encrypted portions of the DNA, by using different keys
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MIRI-HPC: How to improve an Application? HW vs Software

- Asynchronous runtime for task-based dataflow programming models. Author: Jaume Bosch Pons. Grade: 10 (MH)

- Task-based parallel programming model follows a natural way to parallelize

- There is a library (runtime) that takes care of all the “hard” work of parallelize the tasks

- Hardware and Parallel Knowledge helps to speedup applications: Bioinformatics, Earth Science (weather simulations), etc.
MIRI-HPC: How to improve an Application? HW vs Software

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MIRI-AC: Circuit (Chip) Design using Machine Learning

- Machine Learning Techniques for resource prediction in nanoelectronic circuit design. Author: Narcís Ricard. Grade: 9

- Company’s needed resources estimation beforehand

- Problems in the organization due to unknown timing process

- Highly accurate machine learning models for IT metrics (runtime, CPU time and memory)
MEI: HPC for Deep Learning!

  
  - High Performance Computing and Parallel Techniques speed up Deep Learning
    - Image classification
    - Object Detection, etc.
  
  - From 106 hours of training to 12 hours...
MAI: Particular Diseases can be target like Parkinson

- Applying deep-learning techniques to detect freezing of gait episodes in Parkinson's disease patients. **Author: Julià Camps Sereix Grade: 10 (MH)**
  
  - Funded by FP7 European Projects and TV3 Marató

- Accurate ambulatory FOG assessment would enable non-pharmacologic support based on cues and would provide relevant information to neurologists on the disease evolution.

- Automatic detection with 90% accuracy (stat-of-the-art)
Computing and visualizing informative trajectories in temporally annotated data. **Author: Martí Zamora Casals – Grade: 10**

- A trajectory in the medical world is the sequence of events that occur during the life of a patient.

- Trajectory of a patient is formed by states, each state is formed by a central event, normally a diagnostic and a set of secondary events.

- Trajectory graph combines the trajectory of different patients, providing a probability of the next event for a patient with a disease.
Computing and visualizing informative trajectories in temporally annotated data. Author: Martí Zamora Casals – Grade: 10

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Nowadays, Data Analytics is important!
How can you do it?
How can you do it?
Creating networking!
How can you do it?
You can create networking!

• Acquiring the knowledge of OUR master subjects and going further on them…

• Our **professors** are also **researchers**
  ➢ Belong to different departments and research groups
  ➢ Contact them… at class… or directly to the research group/center

• Under **Industrial Agreements**, acquiring even more knowledge and experience!

• Under **International Mobility**
You have several research groups and centers

- 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 (ESAII)
Related departments - research groups

Mathematics (MA)
- MD: Discrete Mathematics
- DCCG: Computational Geometry and Combinatorial Geometry
  http://www-ma2.upc.es/~geomc/gcwww.html
- TN: Numbers Theory
  https://recerca.upc.edu/tn/
- GRTJ: Game Theory
- GRAA: Applied Analysis
- GREC: Knowledge Engineering (with ESAII)
  http://www.upc.edu/web/grec/
- MMAC: Mathematical Models Applied to Social and Natural Sciences
Related departments - research groups

Business Administration (OE)

• EOLI: Industrial Engineering and Logistics
• GREDIC: Innovation and Knowledge Economy
• LEAN MRG: Lean Management
• CERpIE: Research & Development Centre for Enterprises' Improvement and Innovation
Related departments - research groups

Computer Architecture (AC)
http://www.ac.upc.es/en/content/research-groups
- ANA: Advanced Network Architectures
- ARCO: Architectures and Compilers
- CAP: High Performance Computing
- CBA: Broadband Communications Systems
- CNDS: Computer Networks and Distributed Systems
- DAMA: Data Management
- DMAG: Distributed Multimedia Applications
Related departments - research groups

Physics and Nuclear Engineering (FEN)
http://www-fen.upc.es/wfen/research/cjtoresearch.htm
- CS-SIMBIO: Complex Systems - Computer Simulation of Materials and Biological System
- DILAB: Dielectric Material Physics Laboratory
- DONLL: Nonlinear Dynamics, Nonlinear Optics and Lasers
- GAA: Astronomy & Astrophysics
- GCM: Characterization of Materials
- GIEP: Innovative Education in Physics
- GREENER: Studies in Energy and Radiation
- NERG: Nuclear Engineering
- SIMCON: Computer Simulation in Condensed Matter
- GRPFM: Physical Properties of the Materials
Related departments - research groups

Services and Information Systems Engineering (ESSI)
http://www.essi.upc.edu/ca/recerca
• inSSIDE: integrated Software, Services, Information and Data Engineering
• MPI: Modelling and Processing Information
Related departments - research groups

Computer Science (CS)
http://www.cs.upc.edu/research

- ALBCOM: Algorithms, Biocomputing, Complexity and Formal Methods
- GIE: Engineering Computing
- GRPLN: Natural Language Processing
- KEMLG: Knowledge Engineering and Machine Learning (with EIO)
- LARCA: Relational Algorithms, Complexity and Learning
- LOGPROG: Logic and Programming
- MOVING: Modelling, Visualization, Interaction and Virtual Reality
- SOCO: Soft Computing
- STH: Sustainability, Technology and Humanities
Related departments - research groups

Statistics and Operational Research (EIO)
http://www-eio.upc.es/research/index/
- LAIRE: Laboratory of Aeronautical and Industrial Research and Studies
- GRESA: Applied Statistics
- LIAM: Laboratory of Information Analysis and Modelling
- KEMLG: Knowledge Engineering and Machine Learning (with LSI)
- GRASS: Survival Analysis Statistics
- GREMA: Mathematical Statistics and its Applications
- GNOM: Numerical Optimization and Modelling
- PROMALS: Mathematical Programming, Logistics and Simulation
Related departments - research groups

Systems Engineering, Automatic Control and Industrial Informatics (ESAII)
http://webesaii.upc.edu/index.php?option=com_content&task=view&id=41&Itemid=72
- ACES: Advanced Control of Energy Systems
- ACP: Automation and Process Control
- GREC: Knowledge Engineering (with MAII)
- GRINS: Intelligent Robotics and Systems
- NOLIN: Nonlinear Physics and Unbalanced Systems
- SAC: Advanced Control Systems
- SISBIO: Biomedical Signals and Systems
- VIS: Artificial Vision and Intelligent Systems
Strengths of our Masters and Faculty Environment

Disclaimer:
curriculum at Web and Diptics

MAI/MEI/MIRI/MDS

2021/2022

More Master Information
Info.masters@fib.upc.edu
Outline

- FIB with your dreams!
- Industrial and Academic Opportunities
- Grant Opportunities
- Social life, DEFIB and Associations
- Contact Points
Outline

• FIB with your dreams!
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The Universitat Politècnica de Catalunya (UPC-BARCELONATECH) is a public higher education and research institution that is specialized in the fields of architecture, science and engineering.
UPC

- 30+5 departments + research institutes
- 21 (15+4) Associated and Affiliated bodies
- 20 Schools
- ~31,220 Students (9% in Masters)
- 1,967 administrative staff
- 3,015 faculty and research staff
- 294M € Budget
- 10 / 7 campus / cities
UPC: what we do

- High quality teaching
  - based on innovation, interdisciplinarity and internationality

- Studies adapted to the European Higher Education Area
  - Innovation in teaching, educational research
  - Adapting facilities, classrooms and services to the new teaching-learning methods
  - Improving students employability
  - Collaborative programmes with secondary education and professional training centres

All this in several and interesting areas!!
Aerospatial Engineering
Applied Sciences
Architecture, Urbanism and Building Construction
Biosystems Engineering
Business Management and Administration
Civil Engineering
Computer Science and Engineering
Environment, Sustainability and Natural Resources
Industrial Design and Manufacture
Information and Communication Technologies
Artificial Intelligence
UPC: Campus

Barcelona - Campus Nord

ETSECCPB
(Civil Engineering)

ETSETEB
(Telecommunications)

FIB
(Informatics)
The Facultat d’Informàtica de Barcelona (FIB) - from 1977

- Public higher education school within the UPC
- Specialized in university teaching leading to qualifications in the field of informatics and other related areas.
FIB: what we do

● Provide education on **informatics engineering**
● Promote the dissemination of information technologies to contribute to society improvements

● Provide strong background in the sciences that they will have to use along their professional life
  ✓ Prioritizing lasting concepts
  ✓ Promotizing **effective working habits and team working**
  ✓ Stimulating their students' **ability of self-sufficiency**

Created in 1977.
At present around 2100 students and 296 faculty members.
FIB: a reference for European Schools

International Master’s Programme
- MEI, MAI and MIRI have been awarded this distinction by the Catalan Government

FIB Degrees
- Always ranked in the top positions
- School of reference

Accredited Internal Quality Assurance System
Approved by the Catalan Quality Agency (AQU), full member of ENQA

Eur-inf (ASSIN) for GEI, MEI and MIRI
International Rankings

QS World University Rankings 2021
Computer Science, Engineering
1st Spain, 19-25th Europe, top 67th-79th World.

US News Best Global Universities Rankings-2021
Computer Science, Engineering
1st Spain, 14-27th Europe, 73th-103th World.

ARWU (Shanghai Ranking) 2020 – Computer Science & Engineering
2nd Spain, 35-53th Europe, top 151st-200th World.
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- Computer Science (CS)
- Statistics and Operational Research (EIO)
- Systems Engineering, Automatic Control and Industrial Informatics (ESAIiI)
Outline

• FIB with your dreams!
• **Industrial and Academic Opportunities**
• Grant Opportunities
• Social life, DEFIB and Associations
• Contact Points
During your studies... How?
Internships for students become a training activity under the supervision of the Faculty, the goal of which is to apply and complete the academic formation acquired, encouraging the professional skills that prepare for professional activities which facilitate the employment of them.
Companies with Industrial Agreement with FIB

- **Extracurricular Practices:**
  - NO Elective credits
  - MDS only accepts this type of practices

- **Curricular Practices:**
  - Elective credits 6 minimum [+ TFM credits]
  - 30 hours → credit
  - TFM (Modality B or D)
  - 900 hours per year
    - And in Total: 900 hours for MAI and MEI (90 ECTS master)
    - And in Total: 1200 hours for MIRI and MDS (120 ECTS master)

Labor Experience (no under agreement):

- Previous or during the master
- 1600 hours per 6 credit:
  - Then, proportional
FIB: Employment Opportunities

• MEI
  • Information systems, development, production and operations, project managers
  • Database and Systems Architects
  • Heads of the department and IT

• MAI
  • Deep Learning Analysis, for instance for Face recognition
  • Industry Responsibilities
  • Public Sector and Private Sectors like Banks, Big Data Processing Companies (Google, Amazon, etc)

• MIRI
  • Main Software/Firmware/Hardware Companies abroad and national: Nvidia, Intel, ARM, HP, INDO
  • Main Research Centers abroad and National: Medicine Research centers, Hospitals, HPC Research Centers, Security Centers, BSC-CNS, CERN
  • Universities abroad and national: Georgia Tech, Trinity College Dublin, etc.

• MDS
  • Data Scientist, Chief Data Officer, Data Engineer, Data Analyst
  • Public and private sector. For example: banking, insurances (e.g., fraud detection, customer segmentation / profiling), e-Health, genomics, smart cities, smart energy, smart mobility and logistics, industry 4.0, etc.
  • Strong entrepeneurial component and relation to the start-up ecosystem

AND MORE!!!
How can I work and study, at the same time?

What about the timetables?
Masters

masters.fib.upc.edu

Once you are in: www.fib.upc.edu

The qualifications are recognized all around the world and meet the requirements of the EU.
✓ Coordinated by FIB:

Màster en Enginyeria Informàtica (Spanish/Catalan)
Timetables: Mostly Afternoon

Màster en Enginyeria Informàtica - Modalitat Empresa
Timetables: Afternoon – 3 days maximum (4-5 hours/day)

Master in Innovation and Research in Informatics (English)
Timetables: Mostly Morning

Master in Data Science (English)
Timetables: Mostly Afternoon.

Interuniversity Master in Artificial Intelligence (English)
Timetables: All day – Three universities
Student Mobility and Double Degrees
(rel.int@fib.upc.edu)

Incoming
- Academic stays
- Research Visit

Outgoing
- Mobility Calendar
- Information Sessions
- Mobility experiences
- Study abroad
- Internship abroad
- Other activities abroad

Double degrees

International Partnerships
- Mobility Programs
- University Networks
- Partner universities

Study abroad
There are several mobility programs such as Erasmus+, SICUE, Latin America, Vulcanus... Check everything you need to know to study in another university.

Internship abroad
If you want an international professional experience, check the websites and resources we can provide to find work abroad.

Double degrees
Once all the requirements of the agreement are reached, you will obtain the corresponding titles at FIB and at a university abroad. Check which double degrees we have at FIB.

Other activities abroad
Summer schools, short stays...

Mobility calendar
Open international mobility calls for FIB students.

Information sessions
Informative talks about the options, requirements and procedures in mobility.

Mobility grants
Some mobility programs can be financed with a grant. You can also find mobility grant calls without an associate programme.

Mobility experiences
Check the experiences of previous mobility students.
Student Mobility and Double Degrees (rel.int@fib.upc.edu)

- MEI with Institut Supérieur d’Informatique, de Modélisation et de leurs Applications (ISIMA) and Pontificia Universidad Católica del Perú (PUCP)
- MIRI with Politecnico de Torino and Instituto Politécnico Nacional de los Estados Unidos Mexicanos
  - In progress: Grenoble, Aalto
- MAI with PUCP
FIB contact: rel.int@fib.upc.edu

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- MAI with PUCP
Mobility Calendar

Home » Mobility » Outgoing » Mobility Calendar

Calls

- Place application for foreign universities: Erasmus+, Latin America, India, Russia, Taiwan, China and double degrees
- Application for a place at Spanish universities in the SICUE programme
- Google Summer of Code
- Application for mobility in the US
- Vulcanus programme
- Place application for foreign universities: programa Erasmus+, Latin America, CINDA, Canada, India, Russia, Taiwan and China (2nd call)
- iWeek a Paris
- Application for a mobility place with the programme UNITECH
- Application for the National Institute of Informatics (NII) in Tokyo - 2nd call
- Application for the National Institute of Informatics (NII) in Tokyo - 1st call

Periods

- 19 Feb 21 - 03 Mar 21
- 12 Feb 21 - 04 Mar 21
- 29 Mar 21 - 13 Apr 21
- 01 Dec 20 - 22 Jan 21
- 25 Nov 20 - 12 Jan 21
- 14 Sep 20 - 20 Sep 20
- 17 Dec 19 - 28 Jan 20
- 01 Dec 19 - 10 Jan 20
- 06 Sep 19 - 10 Oct 19
- 23 Apr 19 - 19 May 19
INFORMATION SESSIONS: Don’t miss them!

Mobility information session 2020/2021

1st semester

Thursday, 12th November of 2020

In this first session we will inform on the various mobility programs, but we will focus on those whose call is in December-January and on the stays at US universities.

Place: online
- Morning session: 12:10 pm

2nd semester

Wednesday, 16th February of 2021

In this second session we will inform on the various mobility programs, but we will focus on Erasmus+ SICUE and double degree calls.

Place: online
- Morning session: 12:00 pm

For mobility stays during the academic year 2021/2022
Relations with:
• More than 180 bilateral agreements in 43 countries (mainly Europe)

• North America
  ✓ Northeastern University, Boston
  ✓ University of Texas at Dallas
  ✓ University of Purdue
  ✓ College of Computing, Georgia Tech, Atlanta
  ✓ École de Technologie Supérieure, Montreal
    http://www.fib.upc.edu/en/erasmus/estudiar.html

• Asia (UPC agreements)
  ✓ China
  ✓ India
  ✓ Japan
  ✓ Malaysia
  ✓ Thailand

New curricula focus on internationalization
Outline

• FIB with your dreams!
• Industrial and Academic Opportunities
• **Grant Opportunities**
• Social life, DEFIB and Associations
• Contact Points
Grants and Financial Aid

General information

There are multiple ways to fund your studies at the Universitat Politècnica de Catalunya (UPC). Grants, scholarships, mobility grants and loans are offered by the University and other bodies.

Complete information about grants and financial aid at the UPC.

Below you will find information on specific scholarships and grants that you can apply for at the FIB. It is necessary to have applied for admission in the corresponding Master to qualify for any of them.

Grants

- **FIB Visiona - FIB grants (MEI, MIRI and MAI) - 2020-2021**
- **evertis - 2020/2021**
- **”Nacho Navarro” grants (2020/2021)**
- **Fundació Catalunya-La Pedrera (MIRI)**
- **Fundació Catalunya-La Pedrera (MAI)**

Scholarships

- **ARCO Scholarships for MIRI Students**
- **CBA scholarships in AI for networking for MIRI Students**
- **InLab FIB**
- **SANS scholarship for MIRI and MEI - 2019/2020**
- **UPC Research Group DCCG**
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Life
(https://www.fib.upc.edu/ca/la-fib/vida-universitaria)
Past and Future Events

ACM WomENcourage 2019 - Call for participation

ACM Celebration of Women in Computing: womENcourage 2019 brings together people in the computing profession to exchange knowledge and experience and provide special support for women who are pursuing their academic degrees and starting their careers in computing.

Are you an entrepreneur? Participate in BSEC 2019

They challenge you to compete with other students in an environment of entrepreneurs to boost their day taken your same path.

FIB Visiona

Rarehacks: rare diseases hackathon

Fight today for a better tomorrow, come to the Rarehacks in Barcelona during a weekend in summer.

FIB hosts the “eHealth Eurocampus Summer School”

Just started the eHealth Eurocampus 3rd edition Summer School! Until de 13th of July, FIB will be hosting a wonderful group of students working on an intensive training on ehealth.

Anticipation for Physical and Cognitive Disabilities

3rd eHealth Eurocampus Summer School

BSEC
Associations and DEFIB

FIB's Students Delegation (DEFIB)

Goals
The aim of the association is to advise, represent and help the students of FIB as much as we can.

Activitats
Some of the activities we do every quarter or year are organizing the final graduation photograph, manage the council delegates, the talk about specialties subjects, belonging to the governing bodies of FIB, collaborate with other associations, etc. and obviously resolve issues and incidents of students.

Requisits per ser soci
Being a student of FIB

President
Alejandro Adán Navarro

Dades de Contacble
defib@fib.upc.edu
93 437 75 96
Building Omega, office 102

Web
http://defib.upc.edu
Outline

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Coordinators and Tutor Contacts

- MIRI Coordinator: Daniel Jiménez (vd.postgrau@fib.upc.edu)
  - Specialization Coordinator:
    - AC: Jordi Petit
    - CGVR: Nuria Pelechano
    - CNDS: Jose M. Barceló
    - HPC: Josep Llosa
- MEI Coordinator: Daniel Jiménez
  - Tutor: Daniel Jiménez
- MAI Coordinator: Ulises Cortés
  - University coordinator: David Riaño (URV), Maite López (UB), Daniel Jiménez (UPC)
  - Tutor assigned to each student
- MDS Coordinator: Oscar Romero
Administrative and Academic Master Contacts

- General:
  - e-mail: info.masters@fib.upc.edu
  - Instances and other modifications: e-secretaria
  - Tutor and academic questions: vd.postgrau@fib.upc.edu

- Master Specific:
  - MIRI: coordinator specialization and vice-dean
  - MAI: tutor and vice-dean, and coordinator of one of the universities
  - MEI: tutor and vice-dean
  - MDS: coordinator and vice-dean

- Double degrees and mobility: rel.int@fib.upc.edu

- Industrial Agreements: cce@fib.upc.edu
Other possible contacts

- In person
  - Administrative/Academic contact point at B6 1st Floor for Master information and Industrial Agreements
  - Academic contact point for Masters (B6 2nd Floor) and Mobility Masters at B6 Secretary (Entrance) and B6 2nd Floor
- An aim… Feedback Meeting with Subject Student Delegates
  - We would try to do it… at the beginning and at the end of the semester
Quick, Practical and Summary
Information for
MAI/MEI/MIRI/MDS
2021/2022

More Master Information
Info.masters@fib.upc.edu
Summary
Information: General

- Web masters: masters.fib.upc.edu
Summary
Information: Admission

• MEI/MAI/MIRI/MDS -

Admission and Promotions 2021/22:
25\textsuperscript{th} Feb - 12\textsuperscript{th} March – Notification 19\textsuperscript{th} March
15\textsuperscript{th} March – 4\textsuperscript{th} June – Notification 11\textsuperscript{th} June
[15\textsuperscript{th} to 30\textsuperscript{th} June if empty slots] – Notification July

Promotional Presentations- MEI/MAI/MIRI/MDS
MAI/MEI/MIRI/MDS 28\textsuperscript{th} May
• Morning & Afternoon
Special MEI/MEI Mod Industrial: 4\textsuperscript{th} June
• Only Afternoon
Special MDS: 1\textsuperscript{st} June (Morning)

• Admission Criteria
• Publish at each enrollment website
Curricula and other
MAI/MEI/MIRI/MDS
2021/2022

More Master Information
Info.masters@fib.upc.edu
MIRI: Master in Innovation and Research in Informatics

- **English** (B2)
- **4 Specializations** (2 chosen at admission time – w/ priority)
  Advanced Computing, Computer Graphics and Virtual Reality,
  Computer Network and Distributed Systems, High
  Performance Computing
- **Acreditations**: EQUAINE, AQU
- **120 ECTS** : 2 years.
  30 TFM, 30 Common Compulsary Subjects
  48 Specialization ECTS
  12 General Electives
  **Industrial Agreements – Curricular Practicals, Laboral
  Experience**
- **Grants, admissions (criteria selection)** masters.fib.upc.edu
  Conditional Admissions in some cases with complementary
  formation
- **There may be complementary courses**
Summary
Information: MIRI

MIRI: Master in Innovation and Research in Informatics

- **English (B2)**
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  48 Specialization ECTS
  12 General Electives
  **Industrial Agreements – Curricular Practicals, Laboral Experience**
- **Grants, admissions (criteria selection) masters.fib.upc.edu**
  Conditional Admissions in some cases with complementary formation
- **There may be complementary courses**
MIRI - Structure

- **Q1**
  - Compulsory (24)
  - Specialization (6)

- **Q2**
  - Seminars (6)
  - Specialization (24)

- **Q3**
  - Elective (12)
  - Specialization (18)

- **Q4**
  - Master Thesis (30)
Summary
Information: MDS

Master in Data Science

- **English (B2)**
- **Unique** interdisciplinary master to unlock data value in a systematic, rigorous and scalable manner
  - **Data Management**: data lifecycle (data flows, databases, systems; including Big Data scenarios)
  - **Data Analytics**: data analysis and visualization (data mining and machine learning)
- **120 ECTS : 2 years.**
  - 54 compulsory ECTS, 30 ECTS TFM
  - 36 elective ECTS (from three main blocks)
    - Deep Dive in Specific Aspects of Data Science
    - Applications of Data Science for Specific Domains (e.g., Bioinformatics, Health, Transportation, etc.)
    - Innovation and Research
  - Extracurricular Internships. TFM internships
- **Grants, admissions (criteria selection, expected profile and recommended entry bachelor degrees)** masters.fib.upc.edu
  - No complementary courses
Master in Data Science

- **English (B2)**
- **Unique** interdisciplinary master to unlock data value in a systematic, rigorous and scalable manner
  - **Data Management**: data lifecycle (data flows, databases, systems; including Big Data scenarios)
  - **Data Analytics**: data analysis and visualization (data mining and machine learning)
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    - Deep Dive in Specific Aspects of Data Science
    - Applications of Data Science for Specific Domains (e.g., Bioinformatics, Health, Transportation, etc.)
    - Innovation and Research
  - Extracurricular Internships. TFM internships
- **Grants, admissions (criteria selection, expected profile and recommended entry bachelor degrees)** masters.fib.upc.edu
  - No complementary courses
Syllabus

Three main blocks:
- Data Science Fundamentals
- Data Management
- Data Analytics

Data Science Fundamentals
- Statistical Inference and Modeling (SIM - 6 ECTS)
- Algorithms, Data Structures and Databases (ADSDB - 6 ECTS)

Data Management
- Data Warehousing (DW - 6 ECTS)
- Multivariate Analysis (MVA - 6 ECTS)
- Process-oriented Data Science (PODS - 6 ECTS)

Data Analytics
- Big Data Management (BDM - 6 ECTS)
- Semantic Data Management (SDM - 6 ECTS)
- Machine Learning (ML - 6 ECTS)
- Mining Unstructured Data (MUD - 6 ECTS)

Elective Course (5 ECTS)

Semester 1

Semester 2

Semester 3

Semester 4

Elective Courses (30 ECTS)

Master’s Thesis (30 ECTS)
Syllabus

ELECTIVE COURSES

Deep Dive in Specific Aspects of Data Science

Advanced Statistical Modeling (ASM - 6 ECTS)
 Algorithms for Data Mining (ADM - 6 ECTS)
 Optimization Techniques for Data Mining (OTDM - 6 ECTS)
 Advanced Machine Learning (AML - 6 ECTS)
 Advanced Multivariate Modeling (AMM - 6 ECTS)
 Information Retrieval and Recommender Systems (IRRS - 6 ECTS)
 Complex and Social Networks (CSN - 6 ECTS)
 Data Analysis and Knowledge Discovery (DAKD - 5 ECTS)

Applications of Data Science for Specific Domain

Bioinformatics and Statistical Genetics (BSG - 6 ECTS)
 Advanced Human Language Technologies (AHLT - 5 ECTS)
 Human Language Engineering (HLE - 5 ECTS)
 Data Management for Transportation (DMT - 4 ECTS)

Innovation and Research

Viability of Business Projects (VBP - 6 ECTS)
 Debates on Ethics of Data Science (DEDS - 3 ECTS)
 Interdisciplinary Innovation Project (I2P - 6 ECTS)
 Techniques and Methodology of Innovation and Research in Informatics (TMIRI - 6 ECTS)
MAI: Interuniversitary Master in Artificial Intelligence

- English (B2)
- 7 intensifications (not chosen at admission time)
  - Data Science and Computational Intelligence
  - Multi-Agent Systems
  - Human-Computer Interaction
  - Hot Topics in AI and Professional Practice
  - Knowledge Engineering and Machine learning
  - Modeling, Reasoning and Problem Solving
  - Vision, Perception and Robotics
  - Assistive Technologies

- **Acreditations:** International Master AQU
- **90 ECTS : 1.5 years.**
  - 30 Compulsory ECTS
  - 42 Electives among the intensifications
  - 18 TFM

- **Industrial Agreements – Curricular Practicals, Labor Experience**
- **Grants, admissions** (criteria selection) masters.fib.upc.edu
- **There may be complementary courses**
Summary

Information: MAI

MAI: Interuniversitary Master in Artificial Intelligence

- English (B2)
- 7 intensifications (not chosen at admission time)
  Data Science and Computational Intelligence; Multi-Agent Systems; Human-Computer Interaction; Hot Topics in AI and Professional Practice; Knowledge Engineering and Machine learning; Modeling, Reasoning and Problem Solving; Vision, Perception and Robotics. Assistive Technologies

- Acreditations: International Master AQU
- 90 ECTS : 1.5 years.
  30 Compulsory ECTS
  42 Electives among the intensifications
  18 TFM

  Industrial Agreements – Curricular Practicals, Labor Experience

- Grants, admissions (criteria selection) masters.fib.upc.edu
- There may be complementary courses

Admission Open!
MEI: Màster en Enginyeria en Informàtica

- Castellà/Català (B2)
- L’únic que et dona l’equivalència a Enginyer en Informàtica
  - Permet optar a alguns llocs de l'administració pública i altres entitats.
- Acreditacions: EQUAINE, AQU
- 90 ECTS: 1.5 anys - Orientació Professional
  30 TFM,
  45 Obligatoris (36 de TI, 9 de Direcció)
  – 9 obligatoris i 3 optatius: 12 ECTS de direcció
  15 Optatius
- Convenis, Experiència Laboral Reconeguda, pràctiques
- Beques, admissió (criteri d’admissió) a masters.fib.upc.edu
  Admissió condicionada en alguns casos amb complements de formació
- Complements de formació segons “background”
MEI: Màster en Enginyeria en Informàtica

- Castellà/Català (B2)
- L’únic que et dona l’equivalència a Enginyer en Informàtica
  - Permet optar a alguns llocs de l'administració pública i altres entitats.
- Acreditacions: EQUAINE, AQU
- 90 ECTS: 1.5 anys - Orientació Professional
  - 30 TFM,
  - 45 Obligatoris (36 de TI, 9 de Direcció)
    - 9 obligatoris i 3 optatius: 12 ECTS de direcció
  - 15 Optatius

Convenis, Experiència Laboral Reconeguda, pràctiques

- Beques, admissió (criteri d’admissió) a masters.fib.upc.edu
  Admissió condicionada en alguns casos amb complements de formació
- Complements de formació segons “background”
Aquest Màster equival al títol d’Enginyer en Informàtica!
Preu de Màster Habilitant!

1 ECTS → **28.82** Euros*

Grau EI – **27.67** Euros/ECTS

Altres màsters no habilitants: **46.11** Euros/ECTS

* Preus 2020/21 European Union –
NON-EU: 43.23 MEI , Rest: 69.17
Un màster oficial i acreditat!
MEI - Structure

Q1

Business & Management (6)  Information Technology (24)

Q2

Business & Management (6)  Information Technology (24)

Q3

Master Thesis (ideally internship) (30)
MÀSTER MODALITAT
“EMPRESA”

https://masters.fib.upc.edu/masters/master-informatics-engineering-industrial-modality
Màster en Enginyeria Informàtica – Modalitat Empresa

• Formació teòrica i pràctica en diverses àrees de la informàtica
• Èmfasis en Project Management i lideratge d'equips
• Especialment destinat a Graduats en Informàtica, però obert a altres graduats

• Durada: 2 anys
• Idioma: Català/Castellano
• Presencial: FIB, Campus Nord
• Horari: Dl-Dv de 14h-20h – 3 dies
• 90 crèdits ECTS
MEI: Adaptació a Modalitat Empresa

1.5 anys

Q1 Q2 Q3

1/2 any

Tesis Final de Màster

Formació: FIB i Empresa
Treball: Empresa

Formació: Empresa
Treball: Empresa
### Assignatures per Quadrimestre: Títols/assignatures actuals

<table>
<thead>
<tr>
<th>Via Ordinària</th>
<th>Modalitat Empresa</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Q1</strong></td>
<td></td>
</tr>
<tr>
<td>ACAP, CSI, SEU, SGI, PEGTI</td>
<td>SGI, CSI, PEGTI+SECS</td>
</tr>
<tr>
<td>+1.5 (1 assignatura Direcció)</td>
<td>Contracte o buscant CCE</td>
</tr>
<tr>
<td><strong>Q2</strong></td>
<td></td>
</tr>
<tr>
<td>VPEI+FPEI, DGSI, ISDCM, + 7.5 (3 assignatures optatives)</td>
<td>VPEI+FPEI, DGSI, ISDCM</td>
</tr>
<tr>
<td><strong>Q3</strong></td>
<td></td>
</tr>
<tr>
<td>TFM</td>
<td>SEU, ACAP</td>
</tr>
<tr>
<td><strong>Q4</strong></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>TFM (modalitat B/D)</td>
</tr>
</tbody>
</table>

**Modalitat Empresa**
- Horari compacte: 3 tardes a la setmana a la FIB màxim
## MEI: Adaptació Dual (ECTS)

<table>
<thead>
<tr>
<th>Crèdits ECTS</th>
<th>Activitat</th>
<th>Lloc de formació</th>
</tr>
</thead>
<tbody>
<tr>
<td>48 ECTS</td>
<td>Formació a la FIB</td>
<td>FIB</td>
</tr>
<tr>
<td>12 ECTS</td>
<td>Pràctiques Curriculars a la Empresa / Seminaris + Exp Laboral</td>
<td>FIB</td>
</tr>
<tr>
<td>30 ECTS</td>
<td>Tesis Final de Màster a la Empresa</td>
<td>Empresa</td>
</tr>
</tbody>
</table>

**Total: 90 ECTS**

*1 crèdit ECTS 25/30 hores*
MEI: Adaptació Dual (Hores)

- Calendari acadèmic
  - Q1: Setembre – Gener
  - Q2: Febrer – Juny

<table>
<thead>
<tr>
<th>Dedicació mitja diària (hores)</th>
<th>Lloc</th>
</tr>
</thead>
<tbody>
<tr>
<td>≈ 4 o 5 hores</td>
<td>Empresa</td>
</tr>
<tr>
<td>≈ 4 o 5 hores</td>
<td>Aula i treball no presencial</td>
</tr>
</tbody>
</table>
Quick, Practical and Summary Information for MSEC, Master in Cybersecurity and Master in BDMA

2021/2022

More Master Information
Info.masters@fib.upc.edu
Summary

Information: Presentations

• Master’s degree in Cybersecurity

• MSEC
  • Preinscripció Portal d'accés a la universitat (meitat Setembre normalment)
  • Promoció MSEC: Juliol i Setembre, normalment

• Erasmus Mundus in Big Data Management and Analytics
  • Admission already closed for funded students
  • Self-funded students can apply from March to April
Summary Information: MSEC

MSEC: Màster de formació de professors de Secundària

- És necessari tercera llengua (B1) – S’imparteix en Castellà/Català
- Presencial i semipresencial:
  - Batxillerat (Presencial),
  - Formació Professional (Presencial, Semipresencial)
- Acreditations: AQU
- 60 ETCS : 1 year
  - Via lenta: 29 ECTS first year and 31 ECTS second year
  - Practicum – pràctiques en instituts
- Web site:
  https://www.fib.upc.edu/ca/estudis/masters/master-en-formacio-del-professorat-deducacio-secundaria-obligatoria-i-batxillerat-formacio-professional-i-ensenyament
Summary Information: MSEC

https://aplicacions.ensenyament.gencat.cat/pls/apex/f?p=2011014:19::NO:::

Ensenyaments que podeu impartir. Accés a la consulta per titulació.

Informació
Per conèixer els ensenyaments que podeu impartir heu d'incloure en el requadre de la dreta totes les titulacions (inclusos els màsters i altres titulacions de llengües) que teniu i prèmer "Consulta" per visualitzar el cos i els ensenyaments.

- Alguns dels ensenyaments requereixen estar en possessió del màster de formació del professorat o equivalent. Aquesta informació la trobareu a la taula de resultats.
- Alguns dels ensenyaments requereixen haver superat una prova de capacitació (P.C.). Aquesta informació la trobareu a la taula de resultats.

Veure lista de titulacions que proporcionen el màster de formació del professorat o equivalent.
Veure prova de capacitació per especialitat.

Cercador
Cerca la titulació (per la descripció): informàtica

<table>
<thead>
<tr>
<th>Código</th>
<th>Ensenyament</th>
<th>Màster</th>
<th>P.C.</th>
</tr>
</thead>
<tbody>
<tr>
<td>19885</td>
<td>180 crèdits estudis de pedag. o psicopedag. (equivalent Màster formac. de profes. sec. en pedagogia)</td>
<td>Sí</td>
<td>Exempt</td>
</tr>
<tr>
<td>77005</td>
<td>200 crèdits estudis de cons. i restaur. de béns culturals: pintura</td>
<td>Sí</td>
<td>Exempt</td>
</tr>
<tr>
<td>77021</td>
<td>200 crèdits estudis de cons. i restaur. de béns culturals: tèxtils</td>
<td>Sí</td>
<td>Exempt</td>
</tr>
<tr>
<td>77000</td>
<td>200 crèdits estudis de cons. i restaur. de béns culturals: arqueologia</td>
<td>Sí</td>
<td>Exempt</td>
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<tr>
<td>77022</td>
<td>200 crèdits estudis de cons. i restaur. de béns culturals: escultura</td>
<td>Sí</td>
<td>Exempt</td>
</tr>
<tr>
<td>77023</td>
<td>200 crèdits estudis de cons. i restaur. de béns culturals: document gòtic</td>
<td>Sí</td>
<td>Exempt</td>
</tr>
<tr>
<td>17912</td>
<td>Abonament matrícula o cert. d'estar cursant certificat Form.Pedag. (P.P.)</td>
<td>Sí</td>
<td>Exempt</td>
</tr>
<tr>
<td>17908</td>
<td>Abonament matrícula o cert. de curs Matèr de form. professorat d'ed. secundària</td>
<td>Sí</td>
<td>Exempt</td>
</tr>
<tr>
<td>17915</td>
<td>Abonament matrícula o certificat de cursar Màster de Psicopedagogia</td>
<td>Sí</td>
<td>Exempt</td>
</tr>
<tr>
<td>12750</td>
<td>Ajudent Tècnic Sanitàri</td>
<td>Sí</td>
<td>Exempt</td>
</tr>
</tbody>
</table>

Ensenyaments que teniu possibilitat d'impartir amb altres titulacions. Visualitzar combinacions
Ensenyaments que podeu impartir. Accés a la consulta per titulació.

<table>
<thead>
<tr>
<th>Informació</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per conèixer els ensenyaments que podeu impartir heu d'incloure en el requadre de la creta totes les titulacions (inclusos els màsters i altres titulacions de l'UPC) que teniu i preme visualitzar el cos i els ensenyaments.</td>
</tr>
<tr>
<td>Alguns dels ensenyaments requereixen estar en possessió del màster de formació del professorat o equivalent. Aquesta informació la trobarà a la taula de resultats.</td>
</tr>
<tr>
<td>Alguns dels ensenyaments requereixen haver superat una prova de capacitat (P.C.). Aquesta informació la trobarà a la taula de resultats.</td>
</tr>
</tbody>
</table>

Veure la llista de titulacions que comparinen el màster de formació del professorat o equivalent. Veure prova de capacitat per especialitat.

### Cercador

<table>
<thead>
<tr>
<th>Informàtica</th>
</tr>
</thead>
<tbody>
<tr>
<td>(10885) 180 crèdits: Estudis de pedagogia, psicopedagogia (equivalent Mòster formació de professos. d'Educació)</td>
</tr>
<tr>
<td>(77625) 200 crèdits: Estudis de conservatori i restauració de béns culturals: pintura, escultura, arquitectura, escritura i teatre</td>
</tr>
<tr>
<td>(77621) 200 crèdits: Estudis de conservatori i restauració de béns culturals: textils</td>
</tr>
<tr>
<td>(77620) 200 crèdits: Estudis de conservatori i restauració de béns culturals: arqueologia, estudi de béns culturals, escultura</td>
</tr>
<tr>
<td>(77623) 200 crèdits: Estudis de conservatori i restauració de béns culturals: documental</td>
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<tr>
<td>(17608) Abonament matrícula o cert. de cursar Mòster de formació professorat d'ed. secundària</td>
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<tr>
<td>(17912) Abonament matrícula o cert. d'estar cursant certificat Form Pedag. Didàct. (FP)</td>
</tr>
<tr>
<td>(17915) Abonament matrícula o certificat de cursar Mòster de Psicopedagogia</td>
</tr>
<tr>
<td>(12150) Ajudant Tècnic Sanitari</td>
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</table>

### Ensenyaments que podeu impartir

<table>
<thead>
<tr>
<th>Cod.</th>
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<tbody>
<tr>
<td>590 Professors d'ensenyament secundari</td>
</tr>
<tr>
<td>591 Professors tècnics d'I.P.</td>
</tr>
<tr>
<td>595 Professors d'escoles d'arts plàstiques i disseny</td>
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</table>

<table>
<thead>
<tr>
<th>Ensenyament</th>
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<tbody>
<tr>
<td>507 Informàtica</td>
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<tr>
<td>IA Matemàtiques</td>
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<td>TEC Tecnologia</td>
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<td>621 Processos comercials</td>
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<td>622 Processos de gestió administrativa</td>
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<tr>
<td>627 Sistemes i aplicacions informàtiques</td>
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<td>722 Informàtica</td>
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<table>
<thead>
<tr>
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<tbody>
<tr>
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<tr>
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<tr>
<th>P.C.</th>
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<tbody>
<tr>
<td>Exempt</td>
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<td>No</td>
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<td>No</td>
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<td>No</td>
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<tr>
<td>No</td>
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<tr>
<td>Sí</td>
</tr>
</tbody>
</table>
Summary Information: Cybersecurity

- ETSETB (enrollment)/FIB
- 60 ECTS
- Compulsory subjects: 30 ECTS
- Elective subjects: 18 ECTS
- Master Thesis: 12 ECTS
- English

- TFM:
  - Enterprise Internship
  - UPC Research group
  - Mobility: The duration of the master is usually enlarged to 3 semesters

Diagram:

Master Thesis

- Data Security
  - Network Protection
  - Network Authentication & Authorization

Elective subjects

- Infrastructure Security
  - Network Security
  - Network Traffic Monitoring & Analysis

- Software Security
  - Internet Applications and Security
  - Malware
Summary

Information: Erasmus Mundus BDMA

- 5 Universities
  (Université Libre de Bruxelles/Vrije Universiteit Brussel - coordinate)
- 120 ECTS
  - Compulsory subjects: 60 ECTS
  - Elective specialization: 30 ECTS
  - Master Thesis: 30 ECTS
- English

- Available EACEA grants (competitive)
  Price determined by the EACEA
  https://bdma.ulb.ac.be/bdma/

1st semester

2nd semester

Summer school

European BDMA Summer School (eBISS)
Organised by one partner institution

3rd semester

Specialisation

Business Process Analytics
TU/e (NL)

Decision Support and Data Analytics
CS (FR)

Statistics and Deep Learning for Data Analytics
UniPD (IT)

4th semester

Master's Thesis
In any main or associated partner

5th semester

Final event

Master's Theses Defences and Graduation Ceremony
Organised by one partner institution
FAQs

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 to enroll in September. Indeed, if you finalize your bachelor thesis in October you can also apply to a master... contact us for more details

Can I work and study at the same time?

Yes! of course!! there are several opportunities to do extracurricular practices in companies that can help you to obtain ECTS meanwhile you are doing your studies

Also, you can do the master at partial time!

What about next academic course with covid19?

Our objective are 100% face-to-face lectures. If not 100% possible due to public health recommendations we will do our best to have face-to-face or hybrid lectures. We expect you to be here on September!
Master in Artificial Intelligence (MAI)

Master in Informatics Engineering (MEI)

Master in Informatics Engineering – Industrial Modality

Master in Innovation and Research in Informatics (MIRI)

Master in Data Science (MDS)

Màster per al Professorat de Secundària,

Master in Cybersecurity

Erasmus Mundus Master in Big Data Management and Analytics

More Master Information

Info.masters@fib.upc.edu

Daniel Jiménez-González
Vice-dean of Postgraduates Studies