



# Master's Degree in Health Data Science



# Master's Degree in Health Data Science

Maria Vinaixa, Sergio Gómez (URV)

# Outline

- ▶ Overview
- ▶ Academic information
- ▶ Syllabus
- ▶ Q&A

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# Context

- ▶ Big data in **healthcare** growing fast
- ▶ Potential to advance towards **precision medicine**
- ▶ Increasing workforce **demand** and short supply of specialists
  - ▶ Manage, process, get value and knowledge out of these data
- ▶ Educational gap



# Health data science

- ▶ Emerging, fast moving and multidisciplinary discipline



# Health data scientist

- ▶ Specialist with **interdisciplinary** mindset
- ▶ **Collaborative work** with faculty and healthcare providers
- ▶ Develops and creates **models**, **algorithms** and **tools**
- ▶ Uses **data mining**, **statistics**, **statistical modeling**, **machine learning** and **artificial intelligence** to understand relationships in health data
- ▶ Translates analytics into information
- ▶ Large opportunities for **entrepreneurship**



# Our vision

- ▶ Build an **interdisciplinary domain-dependent** technological program
  - ▶ Leveraging computational and information sciences to solve problems relevant to biomedicine and healthcare
- ▶ Participated by **universities, companies, hospitals**, and scientific and technical infrastructures
- ▶ **International**
- ▶ Promote **open science** and **open education** principles, prioritize **open resources** (data, tools and software)
- ▶ Core competencies assembled over the **big data value chain**
- ▶ Train **entrepreneurs** in the field of digital health



# Result

- ▶ Master's Degree in Health Data Science (MHEDAS)



# Result

- ▶ Master's Degree in Health Data Science (MHEDAS)



- ▶ Built upon our previous



# Master's Degree in Health Data Science

- Joint effort of eight Universities



# Master's Degree in Health Data Science

- ▶ Supported by



- ▶ Non-academic partners



# Master's Degree in Health Data Science

- ▶ Supported by

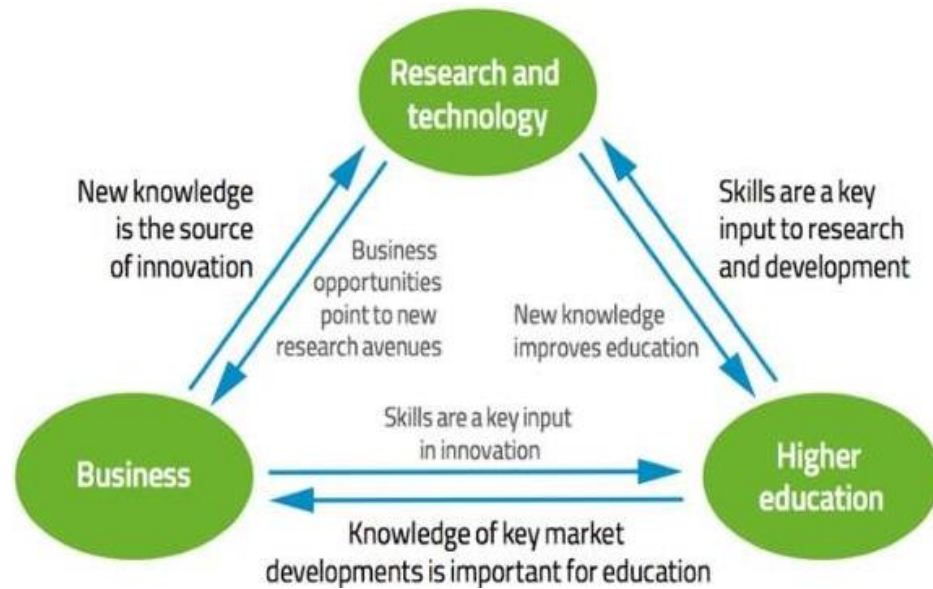


- ▶ Non-academic partners

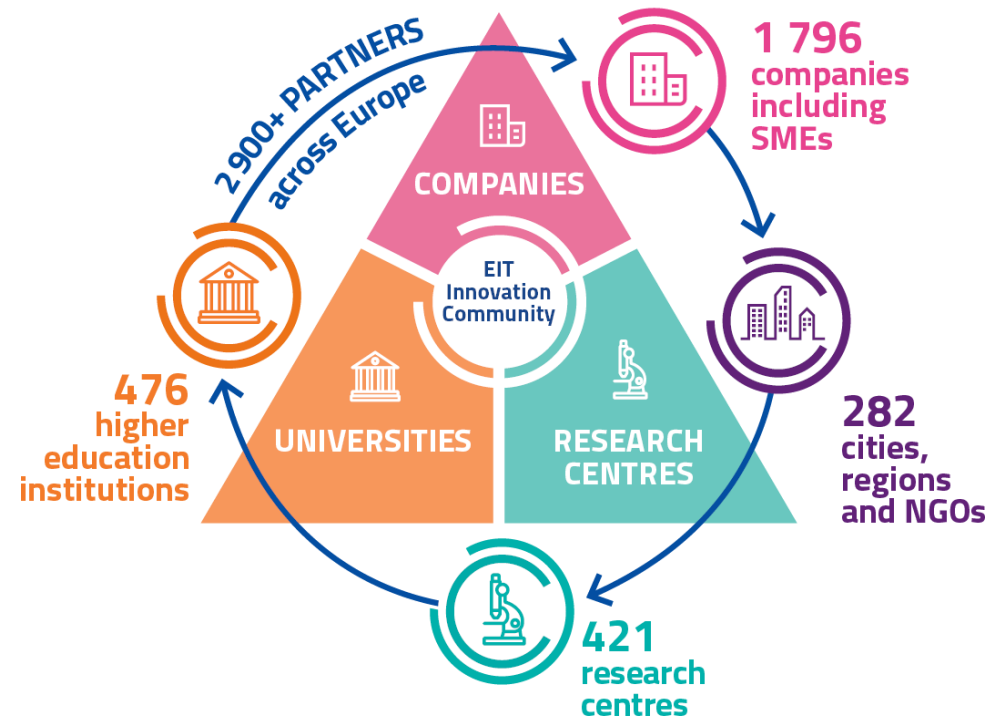


# Master's Degree in Health Data Science

- **EIT** (European Institute of Innovation and Technology) is an EU body created in 2008 to strengthen Europe's ability to innovate



Europe's largest innovation community



# Master's Degree in Health Data Science

- ▶ **EIT** (European Institute of Innovation and Technology) is an EU body created in 2008 to strengthen Europe's ability to innovate



- ▶ **EIT Health** is a KIC (Knowledge Innovation Communities) of EIT, established in 2015



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# Master's Degree in Health Data Science

## Academic information

ECTS	120
Duration	Two academic years
Type	Online
Language	English
Dates	1st course: September 2025 – June 2026 2nd course: September 2026 – June 2027
Group size	80
Fees	~ 3600€ (UE, Iceland, Norway, Liechtenstein, Switzerland, Andorra*, or resident in Spain) Rest of students: ~ 5800€ (prices for 2024-25)

# Master's Degree in Health Data Science

- ▶ Teaching
  - ▶ URV Virtual campus
  - ▶ **Synchronous** classes / activities
    - ▶ Between 14:00h to 18:30h (CET)
  - ▶ Mostly practical activities
- ▶ Singular subjects
  - ▶ **Summer School**: 1.5 weeks, end of Q2, face-to-face and online
  - ▶ Internship
  - ▶ Master's Thesis

CAMPUS VIRTUAL

HELP ▼ ENGLISH (EN) ▼



UNIVERSITAT  
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# Master's Degree in Health Data Science

- ▶ Student's profile
  - ▶ Graduates with **scientific and technical qualification** related to bioinformatics, science, and engineering
    - ▶ Graduates in biomedical engineering, bioinformatics, computer science, mathematics, physics, statistics, and other related engineering
- ▶ Candidate's **requirements**
  - ▶ English competence (B2 level certificate or equivalent)
  - ▶ Digital competence to properly handle virtual training
  - ▶ Strong mathematical grounding
  - ▶ Good programming skills

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# Master's Degree in Health Data Science

## ► Global view

Year	1st		2nd		Total (ECTS)
Semester	Q1	Q2	Q3	Q4	
Compulsory	22.5	30	15		67.5
Elective	7.5	0	15	6	28.5
Internship				15	15
Master's Thesis				9	9
Total (ECTS)	30	30	30	30	120

<b>Semester Q1, compulsory (22.5 ECTS)</b>	<b>ECTS</b>
Electronic health records	4.5
Scientific programming	4.5
Biomedical statistics	6
Medical imaging	4.5
Citizens and patients activities	3

<b>Semester Q2, compulsory (30 ECTS)</b>	<b>ECTS</b>
High-performance and distributed computing	6
Advanced health data analysis	6
Machine learning	6
Business Lab	6
Summer School	6

<b>Semester Q3, compulsory (15 ECTS)</b>	<b>ECTS</b>
Ethics, regulation and privacy	4.5
Project and research methodologies	4.5
Deep learning	6



Semester Q4, compulsory (24 ECTS)	ECTS
Internship	15
Master's thesis	9

Semester Q1, elective (7.5 ECTS)	ECTS
Biomedical sensors and signal processing	3
Complex networks	4.5
Health data visualization and communication	4.5
Biomedical data challenges	3
Biomedicine for engineers	4.5

Semester Q3, elective (15 ECTS)	ECTS
Biomedical sensors and signal processing	3
Complex networks	4.5
Health data visualization and communication	4.5
Text mining for healthcare	3
Computational epidemiology	4.5
Clinical -omics and translational medicine	4.5
Computer-aided diagnosis and decision making	4.5
Environmental health data analysis	3
IOT and AI for health	3
Proteomics for health research	3

Semester Q4, elective (6 ECTS)	ECTS
Advanced medical image analysis	4.5
Health data integration	3
Prediction of dynamic behavior in molecular networks	3
Tools for neuroengineering and neuroimaging	3

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# Master's Degree in Health Data Science

- ▶ Pre-enrollment calendar
  - ▶ Phase 1: March 1 – April 10
  - ▶ Phase 2: April 11 – May 15
  - ▶ Phase 3: May 16 – July 17
  - ▶ Phase 4: July 18 – Sept. 10

The screenshot displays the website of the Universitat Rovira i Virgili. At the top, the university's name is visible alongside navigation links for English, Directory, Shortcuts, and a search icon. A main navigation bar includes links for Studies, Research, Society & Business, About, Campus life, and Information for... The breadcrumb trail indicates the path: Home > Studies > Master's degrees > Admission and registration > Enrolment step by step. The main heading reads "How to enrol in a master's degree step by step". Below this, a horizontal menu lists various options: Overview, Courses, Admission and registration (which is highlighted), Prices, Grants and financial aid, International students, and FAQ. At the bottom, a five-step process is shown: STEP 1: OFFER, STEP 2: PRE-ENROLMENT (highlighted in red), STEP 3: DOCUMENTATION, STEP 4: ADMISSION, and STEP 5: ENROLMENT.

- ▶ Web: <https://www.urv.cat/en/studies/master/courses/health-data-science/>
- ▶ E-mail: [master.health.data@urv.cat](mailto:master.health.data@urv.cat)

# Master's Degree in Health Data Science

- ▶ Pre-enrollment details
  - ▶ Technical validation
  - ▶ Academic admission
    - ▶ If your Bachelor's Degree is not in the list, you must prove your programming skills
- ▶ If admitted
  - ▶ Pay a deposit of 400€ to guarantee your place

# Master's Degree in Health Data Science

- ▶ Enrollment details
  - ▶ Only one enrollment period per academic year
  - ▶ Full-time dedication
    - ▶ Enroll 60 ECTS/year
  - ▶ Part-time dedication
    - ▶ Recommended: enroll ~40 ECTS/year
- ▶ There are periods for enrollment amendments

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## Administrative procedures



# Master's Degree in Health Data Science

- ▶ Grants
  - ▶ One for MHEDAS

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English ▼

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## Grants, prizes and financial assistances

# Thank you for your attention!



- ▶ Contact

- ▶ Academic coordinators

- ▶ Sergio Gómez

- ▶ Maria Vinaixa

- ▶ [master.health.data@urv.cat](mailto:master.health.data@urv.cat)

- ▶ Secretary

- ▶ [masters.scs@urv.cat](mailto:masters.scs@urv.cat)

- ▶ Web

- ▶ <https://www.urv.cat/en/studies/master/courses/health-data-science/>