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UNIVERSITÀ  
DEGLI STUDI  
DI PADOVA

# Study plans

Master Degree in ICT for Internet and Multimedia

Prof. Marco Cagnazzo

Slides courtesy of prof. Simone Milani, updated by MC

**MIME.**

Master's degree ICT Internet Multimedia Engineering

- The study plan is the list of courses you have to pass in order to achieve your degree
- You have to submit a study plan before taking any exam **because you can only enroll exams that are already in your study plan**
- You can submit a study plan starting from Dicembre (thus, before the first exam session)
  - You can update your SP later on, such that you can change the exams you have to pass
- The full process is performed via the *UniWeb* platform
  - The same you use to enroll to exams



- Courses and exams are sometimes used as synonyms, but they aren't
- Courses: the teaching activity: lessons, lab, practical...
  - No need of study plan to enroll / follow
- Exam: The formal verification of your knowledge via written and/or oral test
  - **Need of an approved study plan to enroll**
  - Very often (but not always), no need of following the course
  - If successful, the course is registered as passed (with a mark in the range 18/30 – 30/30, possibly with honors)
  - If unsuccessful, it can be taken again in future sessions, as soon as the course is in the study plan



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# STUDY PLAN: THE PROCESS

**MIME.**

Master's degree ICT Internet Multimedia Engineering

## September-November

- The student looks at the educational offer
- Decides the Curriculum and the Track
- Starts following courses
- Defines a preliminary Study Plan according to the rules we will see later on



## Starting from December:

- The student can submit her/his SP
  - The most important is to put in the SP the exams you want to give in the first semester, first year
  - However, the SP **must include all the semesters**
  - *But* you can update the SP later
    - E.g., before the summer exam session
- If the commission validates the SP, the student can enroll to exams
- If the SP is rejected, the commission suggests how to modify it to make it acceptable
  - Remember that you must have a **validated SP** before being able to enroll to an exam: so, do not wait for the last minute!

## From December to September

- Decide if you want to change your SP well in advance **and in any case at least 15 days before the exams**
- Submit a new SP following the rules and respecting the deadline
- If the new SP is approved, you can enroll to the exam
  - Otherwise, you must submit a new one, again at least 15 days before the exam... so if you have doubts, submit it as soon as possible!

From: [forgetful.student@studenti.unipd.it](mailto:forgetful.student@studenti.unipd.it)

To: [busy.professor@unipd.it](mailto:busy.professor@unipd.it)

Respected Professor,

I would like to take my Internet exam tomorrow, but I forgot to update my study plan: could you please accept my new study plan in the next three hours?

Forgetfully yours,  
Forgetful Student





- Remember:
  - Think about your study plan well in advance
  - Be sure to understand the rules
  - Submit a study ASAP (but not before December)
  - **SP approval requests are processed every second week:** so, you should submit any request (including first submission and updates) at least two weeks before the last day you can enroll to the exams

- You can submit an update request of your SP **as many times as you want** from December to September
- But please, **use this power sparingly!**
  - Each request is additional workload for the commission



- The Student (you):
  - has to understand the rules of the study plan
  - decides the path, the track and the free exams according to the rules
  - submits the study plan
- The Commission (professors Cagnazzo and Giordani)
  - validates or rejects the SPs
  - if the SP is rejected, suggests how to modify it

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# STUDY PLAN: THE RULES

**MIME.**

Master's degree ICT Internet Multimedia Engineering

First you must choose a curriculum and a track  
(indirizzo)

**4 curricula – 2 tracks each**



## TELECOM

- Communications
- Smart Industry 4.0



## CYBERSYSTEMS

- Internet & Security
- Multimedia & Digital Arts



## PHOTONICS

- Photonics
- Quantum information



## LIFE & HEALTH

- Medical ICT
- Machine Learning for healthcare

Whatever the choice, you must achieve between 120 and 126 credits (CFU) divided as follows:

| Name                                      | Notes   | Min | Max |
|---|---|-----|-----|
| Core (Caratterizzanti)                    | Telecom and Electromagnetism  | 45  | 69  |
| Integrative<br>(Affini o integrative) A11 | Physics, Computer Science, Industrial Engineering, Electronics, Robotics, Mathematics | 12  | 30  |
| Integrative<br>(Affini o integrative) A12 | Law, Arts, Literature and Languages, Psychology, Economics                            | 0   | 9   |
| A11+A12                                   |   | 15  | 30  |
| Elective                                  | One (any) course from MIME (6 CFU), two courses (or 12 CFU) <i>fully elective</i>     | 18  | 18  |
| Soft skills                               | One out of three courses  | 3   | 3   |

# Mandatory subjects

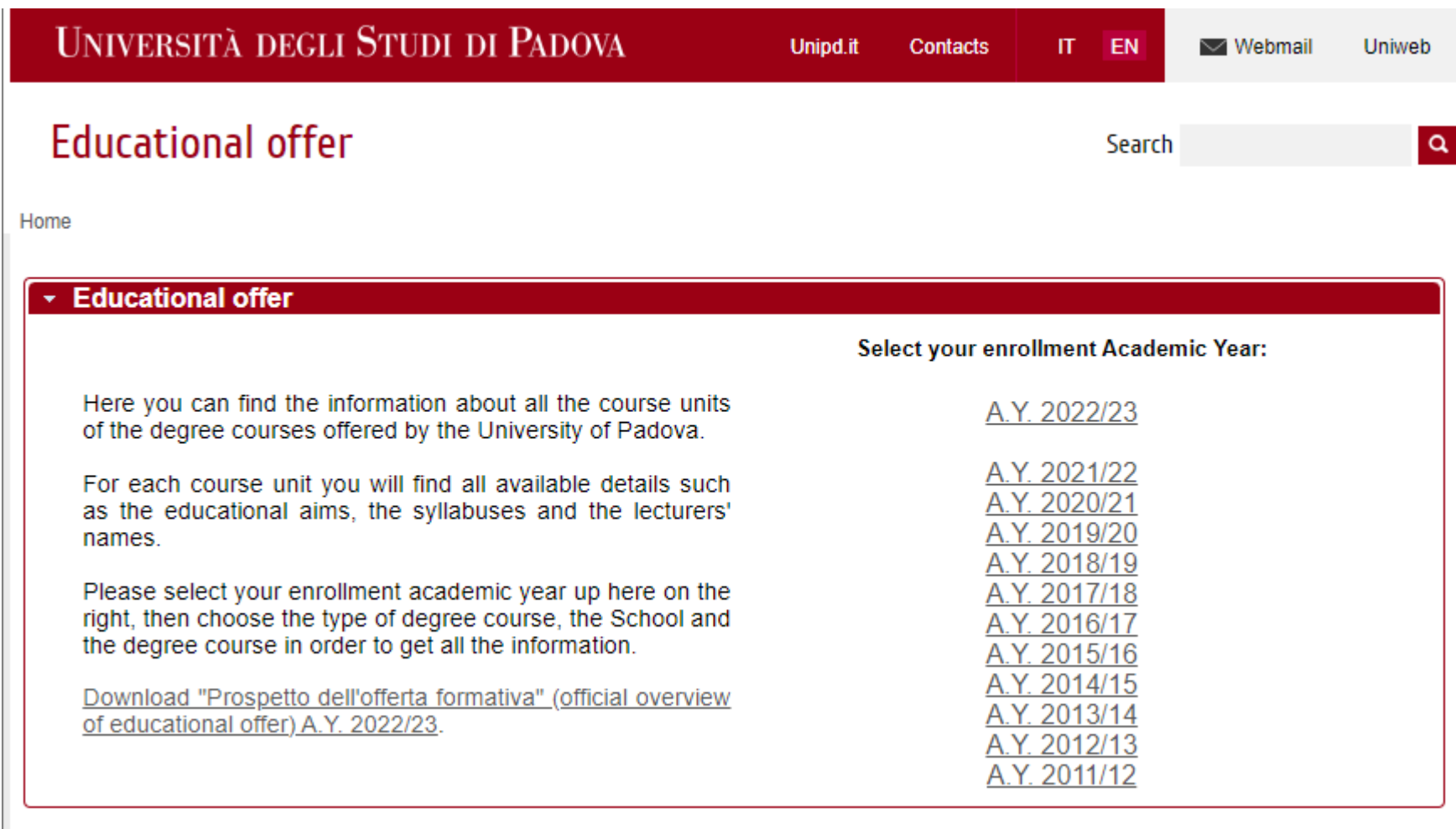
| Curriculum                                | Common mandatory courses<br>6 + 6 = 12 CFU   | Track (Indirizzo)               | Track mandatory course<br>6 CFU   |
|---|--|---------------------------------|-----------------------------------|
| TELECOMMUNICATIONS (001PD)                | <b>Telecom. Principles</b><br>Wireless Networks <i>mod. A</i> +<br>Digital Comm. <i>mod. B</i>                         | COMMUNICATION TECHNOLOGIES      | Stochastic Processes              |
|   |  | SMART INDUSTRY 4.0              | Internet                          |
| CYBERSYSTEMS (002PD)                      | <b>Internet &amp; Multimedia =</b><br>Internet <i>mod. A</i> +<br>Computer Vision <i>mod. B</i>                        | INTERNET & SECURITY             | Stochastic Processes              |
|   |  | MM & DIGITAL ARTS               | Digital & Interactive MM          |
| ICT FOR LIFE AND HEALTH (004PD)           | <b>Digital Processing for L&amp;H =</b><br>Digital Signal Processing <i>mod. A</i> +<br>Machine Learning <i>mod. B</i> | MEDICAL ICT                     | E-Health                          |
|   |  | MACHINE LEARNING FOR HEALTHCARE | Human Data Analytics              |
| PHOTONICS AND QUANTUM ENGINEERING (006PD) | <b>Photonics Technologies =</b><br>Fiber Optics <i>mod. A</i> +<br>Photonic Devices <i>mod. B</i>                      | PHOTONICS                       | Molecular Photonics               |
|   |  | QUANTUM INFORMATION             | Quantum Information and Computing |

- Moreover:
- You have an internship + thesis (9+21 credits)
- English Language B2 (3 credits)





Go to the website <https://en.didattica.unipd.it/> and **click on A.Y. 2023/24**



The screenshot shows the 'Educational offer' page on the University of Padua website. The header includes the university name, navigation links (Unipd.it, Contacts, IT, EN), and utility links (Webmail, Uniweb). A search bar is present on the right. The main content area has a red header 'Educational offer' and a sub-header 'Select your enrollment Academic Year:'. Below this, there are three paragraphs of text and a list of academic years from 2011/12 to 2022/23. A link for downloading the 'Prospetto dell'offerta formativa' is also provided.

**UNIVERSITÀ DEGLI STUDI DI PADOVA**    Unipd.it    Contacts    IT    **EN**    Webmail    Uniweb

## Educational offer

Search

Home

**▼ Educational offer**

**Select your enrollment Academic Year:**

Here you can find the information about all the course units of the degree courses offered by the University of Padova.

For each course unit you will find all available details such as the educational aims, the syllabuses and the lecturers' names.

Please select your enrollment academic year up here on the right, then choose the type of degree course, the School and the degree course in order to get all the information.

[Download "Prospetto dell'offerta formativa" \(official overview of educational offer\) A.Y. 2022/23.](#)

[A.Y. 2022/23](#)

[A.Y. 2021/22](#)

[A.Y. 2020/21](#)

[A.Y. 2019/20](#)

[A.Y. 2018/19](#)

[A.Y. 2017/18](#)

[A.Y. 2016/17](#)

[A.Y. 2015/16](#)

[A.Y. 2014/15](#)

[A.Y. 2013/14](#)

[A.Y. 2012/13](#)

[A.Y. 2011/12](#)

Click on Second cycle degree courses



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## Educational offer

Search

Home > 2022 > First cycle degree courses

|                                   |                                    |                                    |
|-----------------------------------|------------------------------------|------------------------------------|
| <b>First cycle degree courses</b> | <u>Second cycle degree courses</u> | <u>Single cycle degree courses</u> |
|-----------------------------------|------------------------------------|------------------------------------|

Select School:

- [School of Agricultural Sciences and Veterinary Medicine](#)
- [School of Economics and Political Science](#)
- [Law School](#)
- [School of Engineering](#)
- [School of Medicine](#)
- [School of Psychology](#)
- [School of Science](#)
- [School of Human and Social Sciences and Cultural Heritage](#)

Enrolment information

Click on School of Engineering



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## Educational offer

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**Second cycle degree courses**  
2nd cycle

[Single cycle degree courses](#)

Select School:

- [School of Agricultural Sciences and Veterinary Medicine](#)
- [School of Economics and Political Science](#)
- [School of Engineering](#)
- [School of Medicine](#)
- [School of Psychology](#)
- [School of Science](#)
- [School of Human and Social Sciences and Cultural Heritage](#)

[Enrolment information](#)





## Educational offer

Search [Home](#) > [2022](#) > [Second cycle degree courses](#) > [School of Engineering](#)[First cycle  
degree courses](#)[Second cycle  
degree courses](#)[Single cycle  
degree courses](#)**School of Engineering**

Select degree course:

| Degree course code | Degree course name                               | Duration (years) | Class (Ministerial field of study code) | Language |
|--------------------|--|------------------|---|----------|
| IN0532 2020        | <a href="#">BIOENGINEERING</a>                   | 2                | LM-21                                   | Italian  |
| IN2646 2022        | <a href="#">CHEMICAL AND PROCESS ENGINEERING</a> | 2                | LM-22                                   | English  |
| IN2547 2020        | <a href="#">COMPUTER ENGINEERING</a>             | 2                | LM-32                                   | English  |
| IN2546 2021        | <a href="#">CONTROL SYSTEMS ENGINEERING</a>      | 2                | LM-25                                   | English  |
| IN2645 2022        | <a href="#">ELECTRONIC ENGINEERING</a>           | 2                | LM-29                                   | English  |
| IN2595 2021        | <a href="#">ENERGY ENGINEERING</a>               | 2                | LM-30                                   | English  |
| IN1825 2020        | <a href="#">ENVIRONMENTAL ENGINEERING</a>        | 2                | LM-35                                   | English  |
| IN2371 2019        | <a href="#">ICT FOR INTERNET AND MULTIMEDIA</a>  | 2                | LM-27                                   | English  |

Click on ICT  
for Internet  
and  
Multimedia

## Educational offer

Search



Home > 2022 > Second cycle degree courses > School of Engineering > ICT FOR INTERNET AND MULTIMEDIA

[First cycle  
degree courses](#)

**[Second cycle  
degree courses](#)**

[Single cycle  
degree courses](#)

[School of Engineering](#)

ICT FOR INTERNET AND MULTIMEDIA

## Information concerning the students who enrolled in A.Y. 2022/23

If it is not your enrollment A.Y. [go back to the home page](#)

### ▼ Degree course details

|  |  |
|--|--|
| <b>Degree course type</b>                      | Second cycle degree D.M. 270/2004  |
| <b>Degree course code</b>                      | IN2371   |
| <b>Activated in</b>                            | 2017/18  |
| <b>Year of degree course structure</b>         | 2019/20  |
| <b>Class (Ministerial field of study code)</b> | LM-27 - Telecommunications engineering   |
| <b>Degree issued</b>                           |  |
| <b>Branch</b>                                  | Padova   |
| <b>Language</b>                                | English  |
| <b>Degree course tracks</b>                    | <a href="#">"TELECOMMUNICATIONS" [001PD]</a><br><a href="#">"CYBERSYSTEMS" [002PD]</a><br><a href="#">"ICT FOR LIFE AND HEALTH" [004PD]</a><br><a href="#">"INTERNATIONAL MOBILITY" [005PD]</a><br><a href="#">"PHOTONICS AND QUANTUM ENGINEERING" [006PD]</a> |



bring this page  
with you

**Related degree courses** --

**Other degree courses within the same class** --

**Degree programme regulations**

[Regulations](#) Rector's decree and regulations, issued on 22/05/2018 with RD n. 1667/2018

[Annex 1](#) General description of educational activities

[Annex 2](#) Study progression and proposed educational activities (course units, contact hours, credits, relevant subject areas, teaching-learning methodology, etc.)

[Annex 3](#) Plans of studies (tracks) which do not require further approval by the Degree Course Council

[Annex 4](#) Additional annex

Regulations: all the rules

Annex 1: General description

Annex 2: List of all courses

Annex 3: SP schemes

Annex 4: rules for the final degree

Most of those documents is in Italian

## COORTE 2022

| Tipologia                                    | Ambito  | SSD        | Codice     | Curriculum | Insegnamento                            | CFU | ORE         | Anno | Periodo | Att. Obblig. | Freq. Obblig. | Lingua  | Valutaz.        |
|--|---|------------|------------|------------|---|-----|-------------|------|---------|--------------|---------------|---------|-----------------|
| <b>CURRICULUM TELECOMMUNICATIONS (001PD)</b> |   |            |            |            |   |     |             |      |         |              |               |         |                 |
| ALTRO  | Ulteriori conoscenze linguistiche                             | --         | INP9087943 | COMUNE     | ENGLISH LANGUAGE B2 (PRODUCTIVE SKILLS) | 3   | ALT: 75 ore | I    | A1      | SI           | -             | INGLESE | GIUDIZIO FINALE |
| ALTRO  | Altre conoscenze utili per l'inserimento nel mondo del lavoro | --         | INP9086683 | COMUNE     | PROJECT MANAGEMENT                      | 3   | LEZ: 24 ore | I    | S1      | NO           | NO            | INGLESE | GIUDIZIO FINALE |
| ALTRO  | Altre conoscenze utili per l'inserimento nel mondo del lavoro | --         | INP9086698 | COMUNE     | PUBLIC SPEAKING LAB                     | 3   | L: 24 ore   | I    | S1      | NO           | NO            | INGLESE | GIUDIZIO FINALE |
| ALTRO  | Altre conoscenze utili per l'inserimento nel mondo del lavoro | --         | INQ0092598 | COMUNE     | PUBLIC VALUES IN MEDIA AND ICT          | 3   | L: 21 ore   | I    | S1      | NO           | NO            | INGLESE | GIUDIZIO FINALE |
| ALTRO  | Tirocini formativi e di orientamento                          | --         | INP9087862 | 001PD      | INTERNSHIP                              | 9   | T: 225 ore  | I    | A1      | NO           | -             | INGLESE | GIUDIZIO FINALE |
| ALTRO  | Tirocini formativi e di orientamento                          | --         | INQ0091098 | 001PD      | RESEARCH TRAINING                       | 9   | T: 225 ore  | I    | A1      | NO           | -             | INGLESE | GIUDIZIO FINALE |
|  |   |            | INQ2100631 | 001PD      | TELECOMMUNICATION PRINCIPLES (I.C.)     | 12  |             | I    | S1      | SI           | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE                              | Ingegneria delle telecomunicazioni                            | ING-INF/03 | INQ2100633 | 001PD      | DIGITAL COMMUNICATIONS (MOD. B)         | 6   | LEZ: 48 ore | I    | S1      | SI           | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE                              | Ingegneria delle telecomunicazioni                            | ING-INF/03 | INQ2100632 | 001PD      | WIRELESS NETWORKS (MOD. A)              | 6   | LEZ: 48 ore | I    | S1      | SI           | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE                              | Ingegneria delle telecomunicazioni                            | ING-INF/03 | INP9087844 | 001PD      | COMPUTER VISION                         | 6   | LEZ: 48 ore | I    | S1      | NO           | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE                              | Ingegneria delle telecomunicazioni                            | ING-INF/03 | INP9086622 | 001PD      | DIGITAL SIGNAL PROCESSING               | 6   | LEZ: 48 ore | I    | S1      | NO           | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE                              | Ingegneria delle telecomunicazioni                            | ING-INF/02 | INP9086742 | 001PD      | FIBER OPTICS                            | 6   | LEZ: 48 ore | I    | S1      | NO           | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE                              | Ingegneria delle telecomunicazioni                            | ING-INF/03 | INP9087842 | 001PD      | INTERNET OF THINGS AND SMART CITIES     | 6   | LEZ: 48 ore | I    | S1      | NO           | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE                              | Ingegneria delle telecomunicazioni                            | ING-INF/03 | INP9086741 | 001PD      | INTERNET                                | 6   | LEZ: 48 ore | I    | S1      | NO           | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE                              | Ingegneria delle telecomunicazioni                            | ING-INF/03 | INP9087775 | 001PD      | MACHINE LEARNING                        | 6   | LEZ: 48 ore | I    | S1      | NO           | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE                              | Ingegneria delle telecomunicazioni                            | ING-INF/02 | INQ2100741 | 001PD      | MILLIMETER-WAVE DEVICES                 | 6   | LEZ: 48 ore | I    | S1      | NO           | NO            | INGLESE | VOTO FINALE     |

|  |  |  |            |       |   |    |              |    |    |    |    |         |                 |
|--|--|--|------------|-------|---|----|--------------|----|----|----|----|---------|-----------------|
| CARATTERIZZANTE                        | Ingegneria delle telecomunicazioni   | ING-INF/03                                 | INP9087863 | 001PD | OPTICAL AND QUANTUM COMMUNICATIONS            | 6  | LEZ: 48 ore  | I  | S1 | NO | NO | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE                        | Ingegneria delle telecomunicazioni   | ING-INF/03                                 | INP9088878 | 001PD | PROGRAMMING FOR TELECOMMUNICATIONS            | 6  | LEZ: 48 ore  | I  | S1 | NO | NO | INGLESE | VOTO FINALE     |
| AFFINE/INTEGRATIVA                     | Attività formative affini o integrative  | MAT/09                                     | INQ0091320 | 001PD | CONVEX OPTIMIZATION                           | 6  | LEZ: 48 ore  | I  | S1 | NO | NO | INGLESE | VOTO FINALE     |
| AFFINE/INTEGRATIVA                     | Attività formative affini o integrative  | MAT/09                                     | INQ2100739 | 001PD | OPTIMIZATION METHODS FOR ICT                  | 6  | LEZ: 48 ore  | I  | S1 | NO | NO | INGLESE | VOTO FINALE     |
| AFFINE/INTEGRATIVA                     | Attività formative affini o integrative  | FIS/01                                     | INQ2100742 | 001PD | SCIENTIFIC COMPUTING WITH PYTHON              | 6  | LEZ: 48 ore  | I  | S1 | NO | NO | INGLESE | VOTO FINALE     |
| AFFINE/INTEGRATIVA                     | Attività formative affini o integrative  | ING-INF/07                                 | INQ2100740 | 001PD | SENSING AND MEASUREMENT SYSTEMS               | 6  | LEZ: 48 ore  | I  | S1 | NO | NO | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE                        | Ingegneria delle telecomunicazioni   | ING-INF/02                                 | INP9088718 | 001PD | ANTENNAS                                      | 6  | LEZ: 48 ore  | I  | S2 | NO | NO | INGLESE | VOTO FINALE     |
| AFFINE/INTEGRATIVA,<br>CARATTERIZZANTE | Attività formative affini o integrative,<br>Ingegneria delle telecomunicazioni | ING-INF/03 (CFU 4.0),<br>IUS/16 (CFU 2.0)  | INP9084209 | 001PD | DIGITAL FORENSICS                             | 6  | LEZ: 48 ore  | I  | S2 | NO | NO | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE                        | Ingegneria delle telecomunicazioni   | ING-INF/03                                 | INQ1097946 | 001PD | ICT FOR INDUSTRIAL APPLICATIONS               | 6  | LEZ: 48 ore  | I  | S2 | NO | NO | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE                        | Ingegneria delle telecomunicazioni   | ING-INF/02                                 | INP9088802 | 001PD | OPTICAL NETWORKS                              | 6  | LEZ: 48 ore  | I  | S2 | NO | NO | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE                        | Ingegneria delle telecomunicazioni   | ING-INF/03                                 | INQ1098071 | 001PD | SATELLITE COMMUNICATION SYSTEMS               | 6  | LEZ: 48 ore  | I  | S2 | NO | NO | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE                        | Ingegneria delle telecomunicazioni   | ING-INF/03                                 | INP9088676 | 001PD | STOCHASTIC PROCESSES                          | 6  | LEZ: 48 ore  | I  | S2 | NO | NO | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE                        | Ingegneria delle telecomunicazioni   | ING-INF/02 (CFU 3.0), ING-INF/03 (CFU 3.0) | INQ1098073 | 001PD | VISIBLE-LIGHT AND METASURFACES COMMUNICATIONS | 6  | LEZ: 48 ore  | I  | S2 | NO | NO | INGLESE | VOTO FINALE     |
| AFFINE/INTEGRATIVA                     | Attività formative affini o integrative  | ING-INF/04                                 | INQ0091321 | 001PD | EMBEDDED REAL-TIME CONTROL                    | 6  | LEZ: 48 ore  | I  | S2 | NO | NO | INGLESE | VOTO FINALE     |
| AFFINE/INTEGRATIVA                     | Attività formative affini o integrative  | ING-INF/01                                 | INQ1097945 | 001PD | ICT FOR AUTOMOTIVE AND DOMOTICS               | 6  | LEZ: 48 ore  | I  | S2 | NO | NO | INGLESE | VOTO FINALE     |
| AFFINE/INTEGRATIVA                     | Attività formative affini o integrative  | ING-INF/04                                 | INQ1097947 | 001PD | ICT ROBOTICS                                  | 6  | LEZ: 48 ore  | I  | S2 | NO | NO | INGLESE | VOTO FINALE     |
| AFFINE/INTEGRATIVA                     | Attività formative affini o integrative  | FIS/03                                     | INP9088478 | 001PD | QUANTUM INFORMATION AND COMPUTING             | 6  | LEZ: 48 ore  | I  | S2 | NO | NO | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE                        | Ingegneria delle telecomunicazioni   | ING-INF/03                                 | INP9087828 | 001PD | 5G SYSTEMS                                    | 6  | LEZ: 48 ore  | II | S1 | NO | NO | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE                        | Ingegneria delle telecomunicazioni   | ING-INF/03                                 | INQ0090838 | 001PD | INFORMATION THEORY                            | 6  | LEZ: 48 ore  | II | S1 | NO | NO | INGLESE | VOTO FINALE     |
| AFFINE/INTEGRATIVA                     | Attività formative affini o integrative  | FIS/01                                     | INP9088805 | 001PD | PROGRAMMABLE HARDWARE DEVICES                 | 6  | LEZ: 48 ore  | II | S1 | NO | NO | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE                        | Ingegneria delle telecomunicazioni   | ING-INF/03                                 | INP9088688 | 001PD | COMMUNICATION NETWORK DESIGN                  | 6  | LEZ: 48 ore  | II | S2 | NO | NO | INGLESE | VOTO FINALE     |
| AFFINE/INTEGRATIVA                     | Attività formative affini o integrative  | ING-INF/04                                 | INQ1098492 | 001PD | INDUSTRIAL COMMUNICATIONS                     | 6  | LEZ: 48 ore  | II | S2 | NO | NO | INGLESE | VOTO FINALE     |
| LINGUA/PROVA FINALE                    | Per la prova finale  | PROFIN_S                                   | INP9087846 | 001PD | FINAL PROJECT                                 | 21 | PRF: 525 ore | I  | A1 | SI | -  | INGLESE | GIUDIZIO FINALE |

## CURRICULUM CYBERSYSTEMS (002PD)

In order to simplify the process, we propose some simplified rules which are a bit less general, but guarantee SP approval

**Even in this case the SP must be submitted!!!**

| Tipologia   | Ambito  | SSD  | Codice      | Insegnamento                                  | CFU | ORE         | Anno | Periodo | Freq. Obblig. | Lingua  | Valutaz.        |
|---|---|--|-------------|---|-----|-------------|------|---------|---------------|---------|-----------------|
| <b>INSEGNAMENTI OBBLIGATORI</b>   |   |  |             |   |     |             |      |         |               |         |                 |
|   |   |  | INQ2100531  | TELECOMMUNICATION PRINCIPLES (I.C.)           | 12  |             | I    | S1      | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE   | Ingegneria delle telecomunicazioni                            | ING-INF/03                                 | INQ2100532  | WIRELESS NETWORKS (MOD. A)                    | 6   | LEZ: 48 ore | I    | S1      | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE   | Ingegneria delle telecomunicazioni                            | ING-INF/03                                 | INQ2100533  | DIGITAL COMMUNICATIONS (MOD. B)               | 6   | LEZ: 48 ore | I    | S1      | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE   | Ingegneria delle telecomunicazioni                            | ING-INF/03                                 | INF9086676  | STOCHASTIC PROCESSES                          | 6   | LEZ: 48 ore | I    | S2      | NO            | INGLESE | VOTO FINALE     |
| <b>5 INSEGNAMENTI A SCELTA TRA I SEGUENTI</b>   |   |  |             |   |     |             |      |         |               |         |                 |
| CARATTERIZZANTE   | Ingegneria delle telecomunicazioni                            | ING-INF/03                                 | INF9086622  | DIGITAL SIGNAL PROCESSING                     | 6   | LEZ: 48 ore | I    | S1      | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE   | Ingegneria delle telecomunicazioni                            | ING-INF/02                                 | INF9086742  | FIBER OPTICS                                  | 6   | LEZ: 48 ore | I    | S1      | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE   | Ingegneria delle telecomunicazioni                            | ING-INF/03                                 | INF9086741  | INTERNET                                      | 6   | LEZ: 48 ore | I    | S1      | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE   | Ingegneria delle telecomunicazioni                            | ING-INF/03                                 | INF9087775  | MACHINE LEARNING                              | 6   | LEZ: 48 ore | I    | S1      | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE   | Ingegneria delle telecomunicazioni                            | ING-INF/02                                 | INQ2100741  | MILLIMETER-WAVE DEVICES                       | 6   | LEZ: 48 ore | I    | S1      | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE   | Ingegneria delle telecomunicazioni                            | ING-INF/03                                 | INF9086918  | MULTIMEDIA CODING                             | 6   | LEZ: 48 ore | I    | S1      | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE   | Ingegneria delle telecomunicazioni                            | ING-INF/03                                 | INF9087863  | OPTICAL AND QUANTUM COMMUNICATIONS            | 6   | LEZ: 48 ore | I    | S1      | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE   | Ingegneria delle telecomunicazioni                            | ING-INF/03                                 | INF9086878  | PROGRAMMING FOR TELECOMMUNICATIONS            | 6   | LEZ: 48 ore | I    | S1      | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE   | Ingegneria delle telecomunicazioni                            | ING-INF/02                                 | INF9086718  | ANTENNAS                                      | 6   | LEZ: 48 ore | I    | S2      | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE   | Ingegneria delle telecomunicazioni                            | ING-INF/02                                 | INF9086802  | OPTICAL NETWORKS                              | 6   | LEZ: 48 ore | I    | S2      | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE   | Ingegneria delle telecomunicazioni                            | ING-INF/03                                 | INQ 1036071 | SATELLITE COMMUNICATION SYSTEMS               | 6   | LEZ: 48 ore | I    | S2      | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE   | Ingegneria delle telecomunicazioni                            | ING-INF/02 (CFU 3.0), ING-INF/03 (CFU 3.0) | INQ 1036073 | VISIBLE-LIGHT AND METASURFACES COMMUNICATIONS | 6   | LEZ: 48 ore | I    | S2      | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE   | Ingegneria delle telecomunicazioni                            | ING-INF/03                                 | INF9087828  | 5G SYSTEMS                                    | 6   | LEZ: 48 ore | II   | S1      | NO            | INGLESE | VOTO FINALE     |
| CARATTERIZZANTE   | Ingegneria delle telecomunicazioni                            | ING-INF/03                                 | INQ0030838  | INFORMATION THEORY                            | 6   | LEZ: 48 ore | II   | S1      | NO            | INGLESE | VOTO FINALE     |
| <b>3 INSEGNAMENTI A SCELTA TRA I SEGUENTI</b>   |   |  |             |   |     |             |      |         |               |         |                 |
| AFFINE/INTEGRATIVA  | Attività formative affini o integrative                       | MAT/09                                     | INQ0091320  | CONVEX OPTIMIZATION                           | 6   | LEZ: 48 ore | I    | S1      | NO            | INGLESE | VOTO FINALE     |
| AFFINE/INTEGRATIVA  | Attività formative affini o integrative                       | FIS/01                                     | INQ2100742  | SCIENTIFIC COMPUTING WITH PYTHON              | 6   | LEZ: 48 ore | I    | S1      | NO            | INGLESE | VOTO FINALE     |
| AFFINE/INTEGRATIVA  | Attività formative affini o integrative                       | FIS/03                                     | INF9086478  | QUANTUM INFORMATION AND COMPUTING             | 6   | LEZ: 48 ore | I    | S2      | NO            | INGLESE | VOTO FINALE     |
| AFFINE/INTEGRATIVA  | Attività formative affini o integrative                       | FIS/01                                     | INF9086805  | PROGRAMMABLE HARDWARE DEVICES                 | 6   | LEZ: 48 ore | II   | S1      | NO            | INGLESE | VOTO FINALE     |
| <b>UN INSEGNAMENTO TRA QUELLI OFFERTI DAL CORSO DI STUDIO (non ancora inseriti nel piano di studio)</b> |   |  |             |   |     |             |      |         |               |         |                 |
| <b>12 CFU A SCELTA LIBERA (non ancora inseriti nel piano di studio)</b>                                 |   |  |             |   |     |             |      |         |               |         |                 |
| <b>UN INSEGNAMENTO A SCELTA TRA I SEGUENTI</b>  |   |  |             |   |     |             |      |         |               |         |                 |
| ALTRO   | Altre conoscenze utili per l'inserimento nel mondo del lavoro | -  | INF9086683  | PROJECT MANAGEMENT                            | 3   | LEZ: 24 ore | I    | S1      | NO            | INGLESE | GIUDIZIO FINALE |
| ALTRO   | Altre conoscenze utili per l'inserimento nel mondo del lavoro | -  | INF9086699  | PUBLIC SPEAKING LAB (*)                       | 3   | L: 24 ore   | I    | S1      | NO            | INGLESE | GIUDIZIO FINALE |
| ALTRO   | Altre conoscenze utili per l'inserimento nel mondo del lavoro | -  | INQ0032598  | PUBLIC VALUES IN MEDIA AND ICT                | 3   | L: 21 ore   | I    | S1      | NO            | INGLESE | GIUDIZIO FINALE |
| <b>UNA ATTIVITA' A SCELTA TRA LE SEGUENTI</b>   |   |  |             |   |     |             |      |         |               |         |                 |
| ALTRO   | Tirocini formativi e di orientamento                          | -  | INF9087862  | INTERNSHIP                                    | 9   | T: 225 ore  | I    | A1      | -             | INGLESE | GIUDIZIO FINALE |
| ALTRO   | Tirocini formativi e di orientamento                          | -  | INQ0031098  | RESEARCH TRAINING                             | 9   | T: 225 ore  | I    | A1      | -             | INGLESE | GIUDIZIO FINALE |



# About 12 CFU courses

- When you select a 12 CFU course ... you are automatically enrolled into mod. A and B
- You can select them separately (as individual courses). **Not** recommended unless ...
  - You are planning to acknowledge one of the subjects
  - You are taking the two subjects on separate years
  - You are attending Cybersystems and come from Bachelor degree in Computer Engineering (Triennale in Ingegneria Informatica)



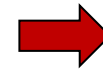
You must replace Found. of DB with another exam

There are some thresholds to be respected

Total amount of credits: min 120 max 126.

Min. 45 max 69 CFUs core credits

Min. 15 max 30 CFU integrative credits.



Max. 9 for non STEM subjects

Min. 9 max. 15 CFUs elective credits

1 mandatory soft skill (3 CFU)



# Freedom to choose ... with a few bounds

- You can select a subject from another course track (even the mandatory one)
- You can select exams from other master degree or departments ... but they must be compatible with the degree **and there must not be an equivalent in ICT (or at DEI)**
  - Eg., you cannot take a Machine Learning course from another department (Physics, Math, etc.) since there is a ML course within MIME!
- Time schedule superposition can not be granted across different course tracks or master degrees ...

Use this option with attention!

- The fact that the course has an integrative label does not make it automatically eligible. -> **the final decision is made by the Commission**
- If there is an analogous course available at DEI, you must take that one
- The study plan must make sense: courses must be compliant with ICT programs
- Also check this out: Some courses have a double labelling (CORE + INTEGRATIVE)

This affects the final counting.



TELECOMMUNICATIONS

Track: Communication  
Technologies

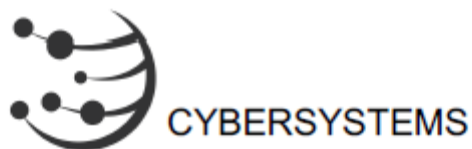
|                                   |   |                                    |
|-----------------------------------|---|------------------------------------|
| Mandatory                         | Digital Communications                        |                                    |
|                                   | Wireless Networks                             |                                    |
| Choose 5                          | Stochastic Processes                          |                                    |
|                                   | 5G Systems                                    |                                    |
|                                   | Antennas                                      |                                    |
|                                   | Digital Signal Processing                     |                                    |
|                                   | Fiber Optics                                  |                                    |
|                                   | Information Theory                            |                                    |
|                                   | Internet                                      |                                    |
|                                   | Machine Learning                              |                                    |
|                                   | Millimeter-wave devices                       |                                    |
|                                   | Multimedia Coding                             |                                    |
|                                   | Optical and Quantum Communications            |                                    |
|                                   | Optical Networks                              |                                    |
|                                   | Satellite Communication Systems               |                                    |
|                                   | Visible-light and Metasurfaces Communications |                                    |
|                                   | Choose 3                                      | Convex Optimization                |
|                                   |   | Programmable Hardware Devices      |
|                                   |   | Programming for Telecommunications |
| Quantum Information and Computing |   |                                    |
| Scientific Computing with Python  |   |                                    |
| One additional course (6)         |   |                                    |
|                                   | Fully elective credits (12)                   |                                    |
|                                   | Final Project                                 |                                    |
|                                   | English B2                                    |                                    |
| Choose 1                          | Project Management                            |                                    |
|                                   | Public Speaking Lab                           |                                    |
|                                   | Public Values in Media and ICT                |                                    |
| Choose 1                          | Internship                                    |                                    |
|                                   | Research Training                             |                                    |



TELECOMMUNICATIONS

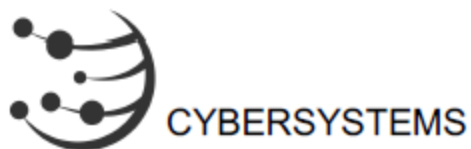
Track: Smart Industry 4.0

|           |   |
|-----------|---|
| Mandatory | Digital Communications                        |
|           | Wireless Networks                             |
|           | Internet                                      |
| Choose 5  | 5G Systems                                    |
|           | Antennas                                      |
|           | Communication Network Design                  |
|           | Computer Vision                               |
|           | Digital Forensics                             |
|           | Digital Signal Processing                     |
|           | ICT for Industrial Applications               |
|           | Internet of Things and Smart Cities           |
|           | Machine Learning                              |
|           | Stochastic Processes                          |
|           | Visible-light and Metasurfaces Communications |
| Choose 3  | Embedded Real-time Control                    |
|           | ICT for Automotive and Domotics               |
|           | ICT Robotics                                  |
|           | Industrial Communications                     |
|           | Optimization Methods for ICT                  |
|           | Programmable Hardware Devices                 |
|           | Programming for Telecommunications            |
|           | Sensing and Measurement Systems               |
|           | One additional course (6)                     |
|           | Fully elective credits (12)                   |
|           | Final Project                                 |
|           | English B2                                    |
| Choose 1  | Project Management                            |
|           | Public Speaking Lab                           |
|           | Public Values in Media and ICT                |
| Choose 1  | Internship                                    |
|           | Research Training                             |



**Track: Internet & Security**

|                                  |                                     |                    |
|----------------------------------|-------------------------------------|--------------------|
| Mandatory                        | Internet                            |                    |
|                                  | Computer vision                     |                    |
|                                  | Stochastic processes                |                    |
| Choose 5                         | Communication Network Design        |                    |
|                                  | Digital Forensics                   |                    |
|                                  | Digital Signal Processing           |                    |
|                                  | Game Theory                         |                    |
|                                  | ICT for Industrial Applications     |                    |
|                                  | Information Security                |                    |
|                                  | Internet of Things and Smart Cities |                    |
|                                  | Machine Learning                    |                    |
|                                  | Network Analysis and Simulation     |                    |
|                                  | Network Coding                      |                    |
|                                  | Network Science                     |                    |
|                                  | Neural Networks and Deep Learning   |                    |
|                                  | Wireless Networks                   |                    |
|                                  | Choose 3                            | Big Data Computing |
|                                  |                                     | Cryptography       |
| Foundations of Databases         |                                     |                    |
| Optimization Methods for ICT     |                                     |                    |
| Reinforcement Learning           |                                     |                    |
| Scientific Computing with Python |                                     |                    |
| Web Applications                 |                                     |                    |
| One additional course (6)        |                                     |                    |
| Fully elective credits (12)      |                                     |                    |
| Final Project                    |                                     |                    |
| English B2                       |                                     |                    |
| Choose 1                         | Project Management                  |                    |
|                                  | Public Speaking Lab                 |                    |
|                                  | Public Values in Media and ICT      |                    |
| Choose 1                         | Internship                          |                    |
|                                  | Research Training                   |                    |



**Track: Multimedia & Digital Arts**

|                             |   |   |
|-----------------------------|---|---|
| Mandatory                   | Internet                                |   |
|                             | Computer vision                         |   |
|                             | Digital and Interactive Multimedia      |   |
| Choose 5                    | 3D Augmented Reality                    |   |
|                             | Digital Forensics                       |   |
|                             | Digital Signal Processing               |   |
|                             | Game Theory                             |   |
|                             | Information Theory                      |   |
|                             | Internet of Things and Smart Cities     |   |
|                             | Machine Learning                        |   |
|                             | Multimedia Coding                       |   |
|                             | Network Analysis and Simulation         |   |
|                             | Network Science                         |   |
|                             | Neural Networks and Deep Learning       |   |
|                             | Video Communication and User Experience |   |
|                             | Choose 3                                | Computer Engineering for Music and Multimedia |
|                             |   | Digital Storytelling                          |
| History of Animation        |   |   |
| Human Computer Interaction  |   |   |
| Natural Language Processing |   |   |
| Reinforcement Learning      |   |   |
| One additional course (6)   |   |   |
| Fully elective credits (12) |   |   |
| Final Project               |   |   |
| English B2                  |   |   |
| Choose 1                    | Project Management                      |   |
|                             | Public Speaking Lab                     |   |
|                             | Public Values in Media and ICT          |   |
| Choose 1                    | Internship                              |   |
|                             | Research Training                       |   |





PHOTONICS & QUANTUM

**Track: Photonics**

|                                     |   |  |
|-------------------------------------|---|--|
| Mandatory                           | Fiber Optics                                  |  |
|                                     | Photonic Devices                              |  |
|                                     | Molecular Photonics                           |  |
| Choose 6                            | Antennas                                      |  |
|                                     | Biophotonics                                  |  |
|                                     | Digital Communications                        |  |
|                                     | Digital Signal Processing                     |  |
|                                     | Internet                                      |  |
|                                     | Millimeter-wave Devices                       |  |
|                                     | Nanophotonics                                 |  |
|                                     | Optical and Quantum Communications            |  |
|                                     | Optical Networks                              |  |
|                                     | Satellite Communication Systems               |  |
|                                     | Visible-light and Metasurfaces Communications |  |
|                                     | Choose 2                                      | Nanostructured Materials               |
|                                     |   | Optoelectronics for Green Technologies |
| Photovoltaic Science and Technology |   |  |
| Programmable Hardware Devices       |   |  |
| Quantum Information and Computing   |   |  |
| One additional course (6)           |   |  |
| Fully elective credits (12)         |   |  |
| Final Project                       |   |  |
| English B2                          |   |  |
| Choose 1                            | Project Management                            |  |
|                                     | Public Speaking Lab                           |  |
|                                     | Public Values in Media and ICT                |  |
| Choose 1                            | Internship                                    |  |
|                                     | Research Training                             |  |



PHOTONICS & QUANTUM

**Track: Quantum Information**

|           |  |
|-----------|--|
| Mandatory | Fiber Optics                           |
|           | Photonic Devices                       |
|           | Quantum Information and Computing      |
| Choose 6  | Biophotonics                           |
|           | Digital Signal Processing              |
|           | Internet                               |
|           | Machine Learning                       |
|           | Nanophotonics                          |
|           | Optical and Quantum Communications     |
|           | Optical Networks                       |
|           | Choose 2                               |
|           | Satellite Communication Systems        |
|           | Optoelectronics for Green Technologies |
|           | Molecular Photonics                    |
|           | Quantum Methods for ICT                |
|           | Quantum Optics and Lasers              |
| Choose 1  | Quantum Technologies                   |
|           | One additional course (6)              |
|           | Fully elective credits (12)            |
|           | Final Project                          |
|           | English B2                             |
| Choose 1  | Project Management                     |
|           | Public Speaking Lab                    |
|           | Public Values in Media and ICT         |
| Choose 1  | Internship                             |
|           | Research Training                      |



ICT FOR LIFE & HEALTH

Track: Medical ICT

|           |   |
|-----------|---|
| Mandatory | Digital Signal Processing                                     |
|           | Machine Learning  |
|           | e-Health  |
| Choose 5  | 3D Augmented Reality  |
|           | Biophotonics  |
|           | Life Data Epidemiology  |
|           | Multimedia Coding   |
|           | Human Data Analytics  |
|           | Network Science   |
|           | Neural Networks and Deep Learning                             |
|           | Secure Digital Healthcare                                     |
|           | Video Communication and User Experience                       |
| Choose 3  | Biomedical Wearable Technologies for healthcare and Wellbeing |
|           | Computational Genomics  |
|           | Molecular Photonics   |
|           | Neuroimaging  |
|           | Neurorobotics and Neurorehabilitation                         |
|           | Precision Medicine  |
|           | Scientific Computing with Python                              |
|           | Sensing and Measurement Systems                               |
|           | Sports Engineering and Rehabilitation Devices                 |
|           | One additional course (6)                                     |
|           | Fully elective credits (12)                                   |
|           | Final Project   |
|           | English B2  |
| Choose 1  | Project Management  |
|           | Public Speaking Lab   |
|           | Public Values in Media and ICT                                |
| Choose 1  | Internship  |
|           | Research Training   |



ICT FOR LIFE & HEALTH

Track: ML for healthcare

|           |                                   |
|-----------|-----------------------------------|
| Mandatory | Digital Signal Processing         |
|           | Machine Learning                  |
|           | Human Data Analytics              |
| Choose 5  | 3D Augmented Reality              |
|           | Biological Data                   |
|           | Biometrics                        |
|           | Computer Vision                   |
|           | e-Health                          |
|           | Game Theory                       |
|           | Life Data Epidemiology            |
|           | Neural Networks and Deep Learning |
|           | Stochastic Processes              |
| Choose 3  | Convex Optimization               |
|           | Human Computer Interaction        |
|           | Natural Language Processing       |
|           | Neuroimaging                      |
|           | Physical Models of Living Systems |
|           | Precision Medicine                |
|           | Reinforcement Learning            |
|           | Scientific Computing with Python  |
|           | Sensing and Measurement Systems   |
|           | One additional course (6)         |
|           | Fully elective credits (12)       |
|           | Final Project                     |
|           | English B2                        |
| Choose 1  | Project Management                |
|           | Public Speaking Lab               |
|           | Public Values in Media and ICT    |
| Choose 1  | Internship                        |
|           | Research Training                 |

- Total number of credits outside range 120-126.
- Not enough core credits (<45): pay attention to the label of courses.
- Including courses outside the department and not pertinent to ICT.
- Including courses that have an equivalent in ICT or overlaps with other exams in study plan.



*The course STORIA DEL FILM E VIDEO D'ARTISTA and STORIA MODERNA can not be included in the Study plan.*

*The course MOBILE PROGRAMMING E MULTIMEDIA presents several overlappings with Computer Vision and Multimedia Coding. It must be replaced with another course*

The course is not compatible with ICT study plan.

*Mandatory exams FOUNDATION OF DATABASE and NETWORK SCIENCE are missing.*

Mandatory exams were not included.

*There are superpositions between LEARNING FROM NETWORKS and NETWORK SCIENCE. Please replace LEARNING FROM NETWORKS with another subject.*

Overlaps are present.

*The study plan includes 114 CFUs, while the minimum allowed amount is 120 (126 at max). Please add one exam. /. Your plan cannot be approved because it includes 132 ECTS, while the maximum is 126.*

Not enough/too many subjects.



# Acknowledgement of past activities

- If you already have a Master degree *or a 4-years Bachelor degree* it is possible to acknowledge some of your past activities
- request evaluated by a Commission

## Segreteria Studenti

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