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UNIVERSITAS · STUDII PADUANI
MCCXXII

UNIVERSITÀ
DEGLI STUDI
DI PADOVA

WELCOME DAY
04.10.2023

Master's degree in
CYBERSECURITY

Study Plan

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- Cybersecurity is a **highly inter-disciplinary** master degree (LM-66)

- It builds on **three main areas of expertise**: science, technology, and law/psychology/business

- It allows you to get the **national qualification** for the **engineering profession** and enroll to the register of professional engineers (*albo degli ingegneri*)
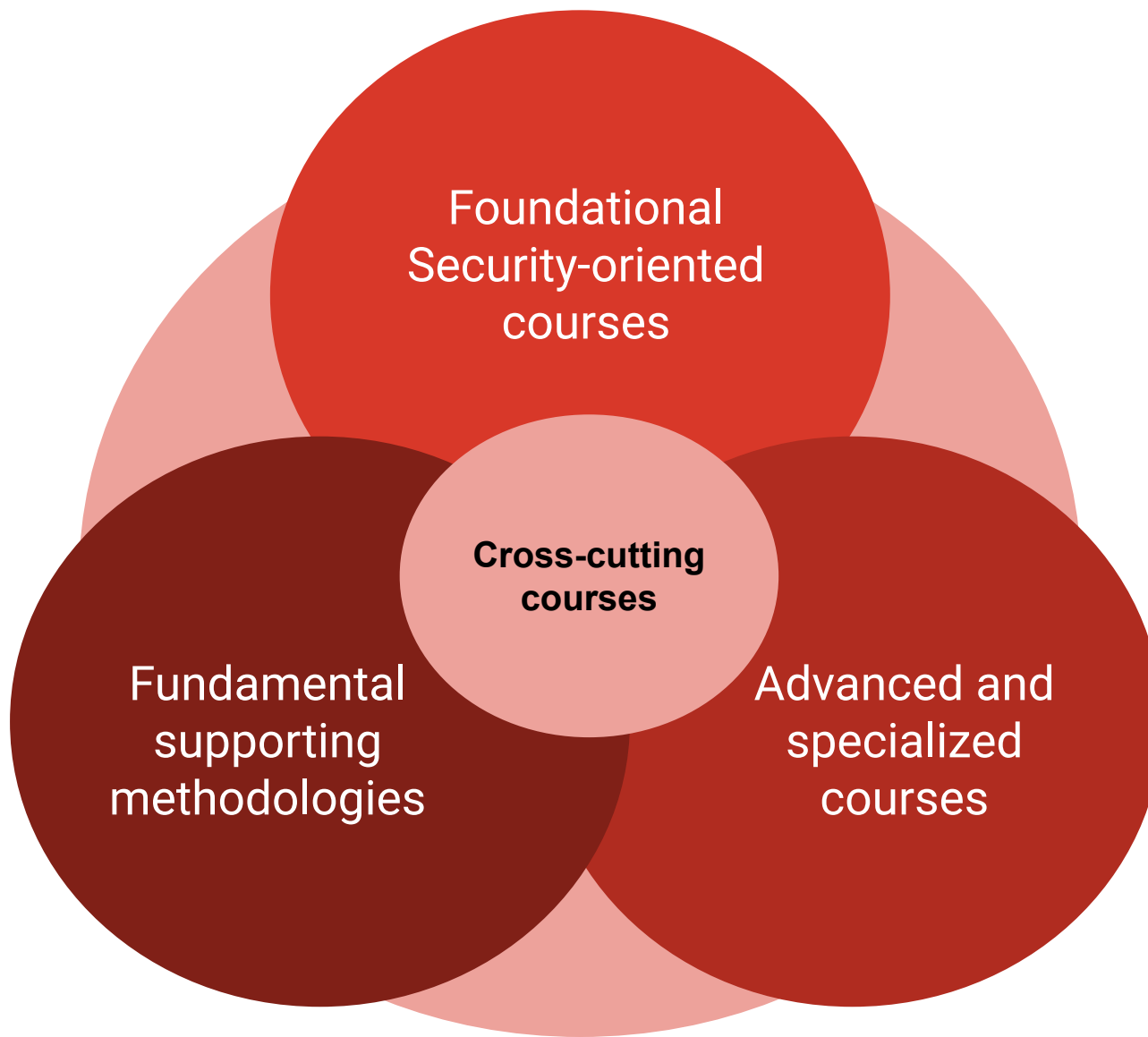
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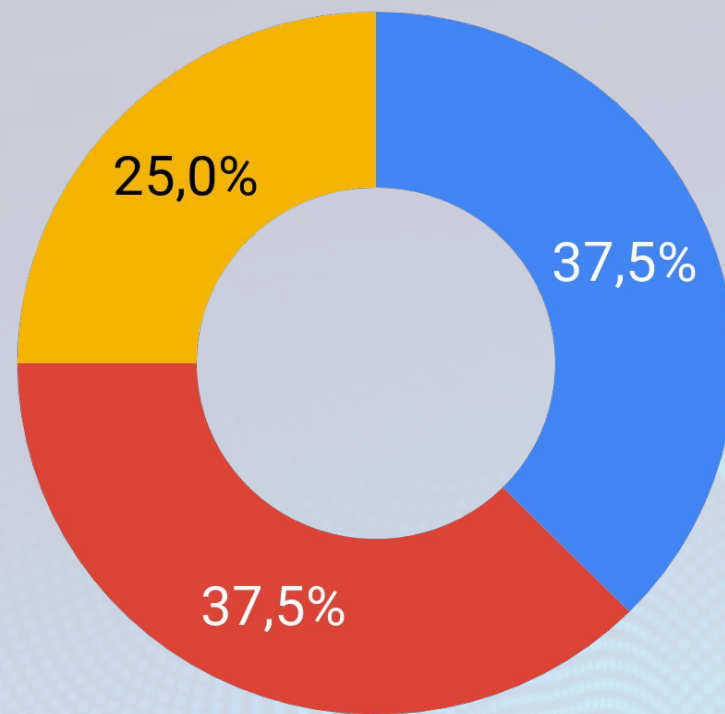
- Scientific, e.g. computer science and math
- Technology, e.g. engineering
- Law, Psychology, and Business
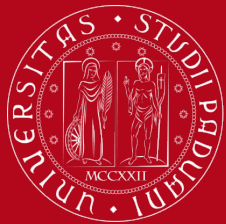
- Master degree
  - fully in **English**
  - **120 ECTS*** in total
  - **6 ECTS** courses

*1 ECTS (European Credit Transfer System) = 25 hours of student work

- **60 ECTS** of mandatory courses
  - base courses on core security
  - supporting methodologies
  - advanced topics

- **12 ECTS** of elective courses
- **12 ECTS** of courses freely chosen by the student

- **3 ECTS** English (B2 level)
- **3 ECTS** Extra Activities (seminars, project, …)

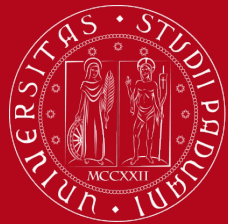- **30 ECTS** Thesis, possibility of internship in a company
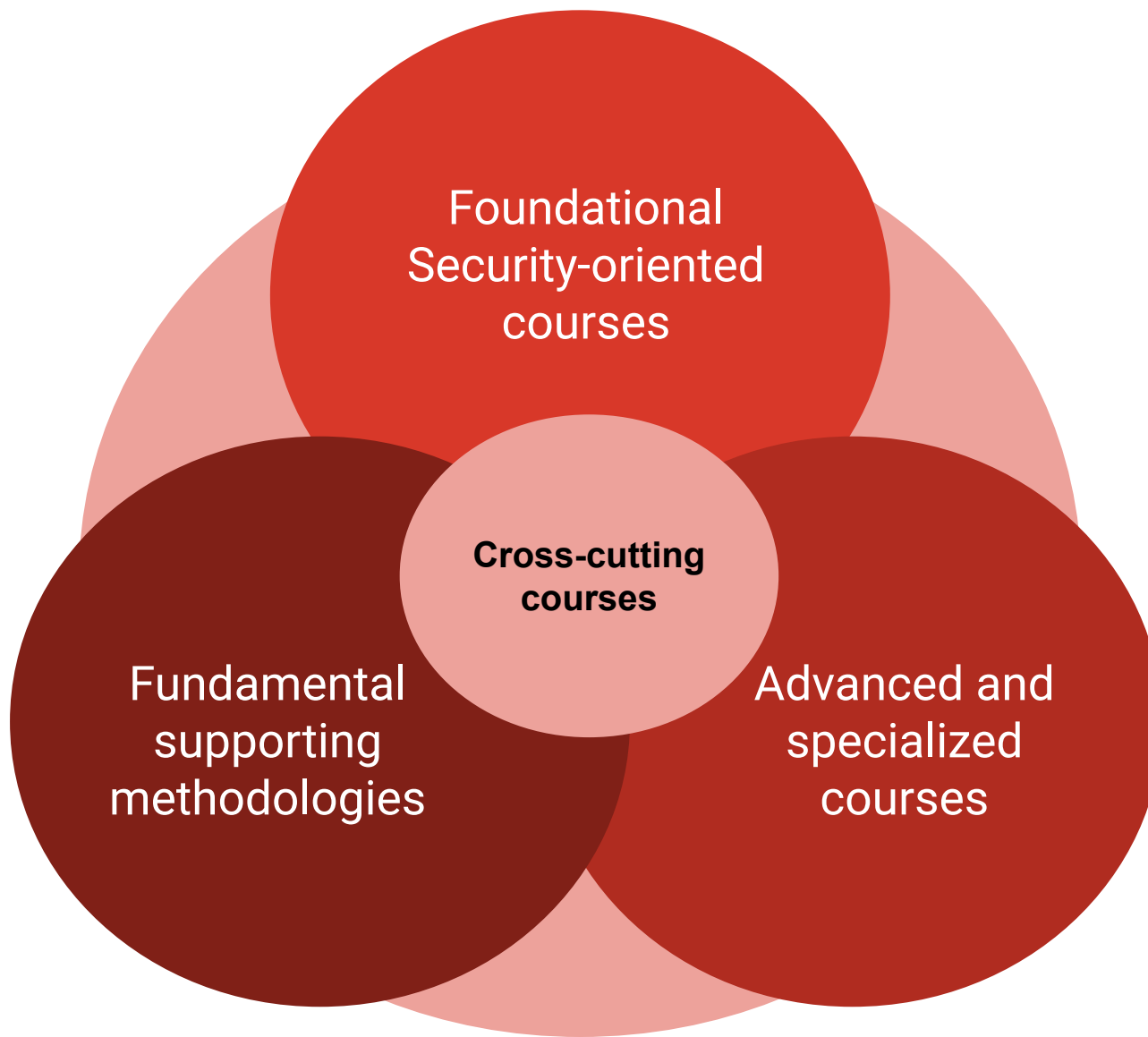
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- **60 ECTS of mandatory courses**
  - **CYBERSECURITY AND CRYPTOGRAPHY: PRINCIPLES AND PRACTICES (12 ECTS)**
  - **INFORMATION SECURITY (6 ECTS)**
  - MACHINE LEARNING (6 ECTS)
  - DEEP LEARNING (6 ECTS)
  - COGNITION AND COMPUTATION (6 ECTS)
  - STOCHASTIC PROCESSES (6 ECTS)
  - DIGITAL FORENSICS AND BIOMETRICS (6 ECTS)
  - ADVANCED TOPICS IN COMPUTER AND NETWORK SECURITY (6 ECTS)

- 1 course (6 ECTS) among:
  - HUMAN COMPUTER INTERACTION
  - LAW AND DATA
  - SERVICE MANAGEMENT

Foundational Security-oriented courses

Cross-cutting courses

Fundamental supporting methodologies

Advanced and specialized courses
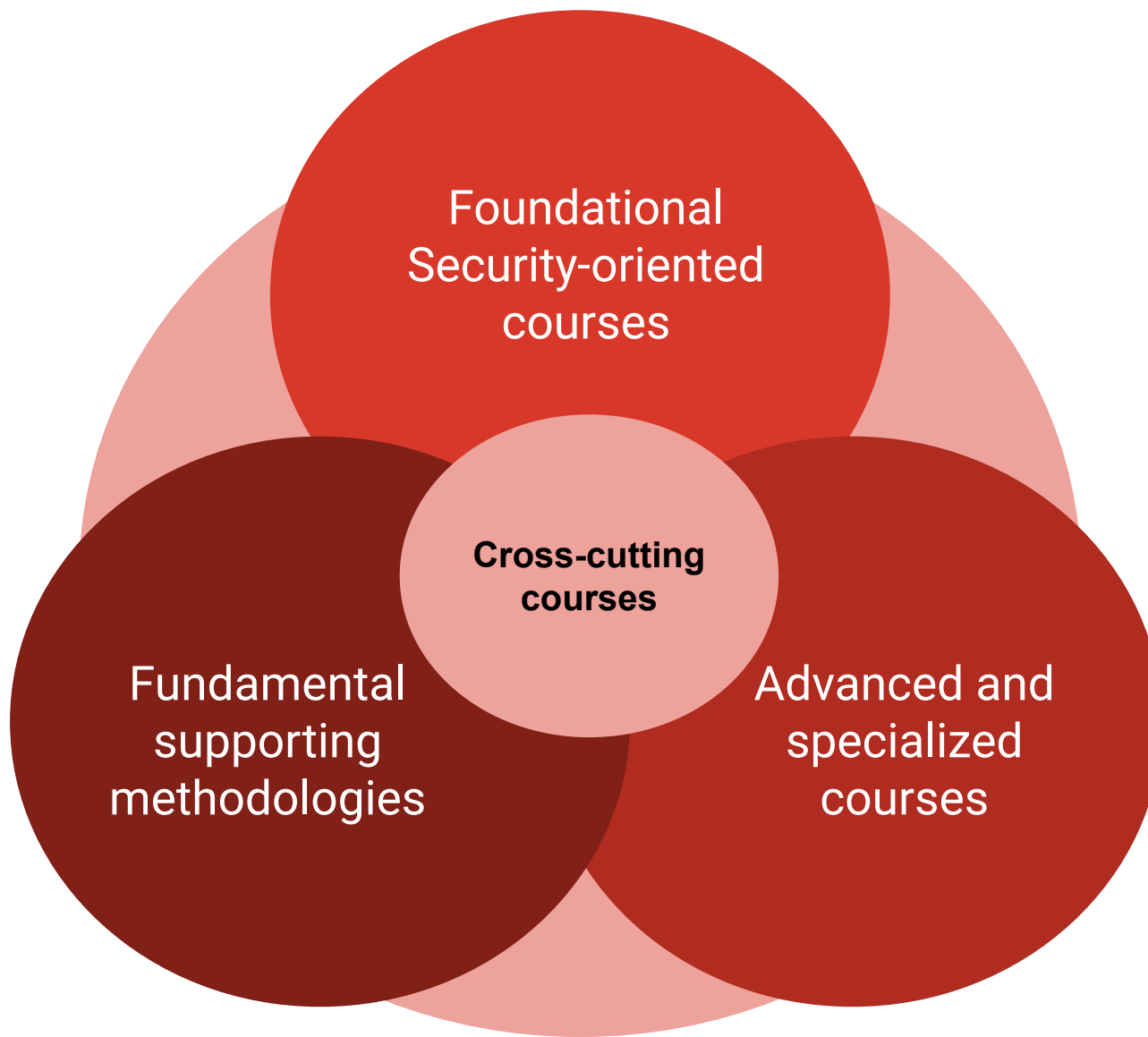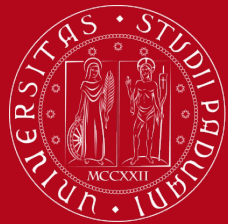
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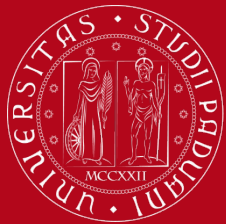
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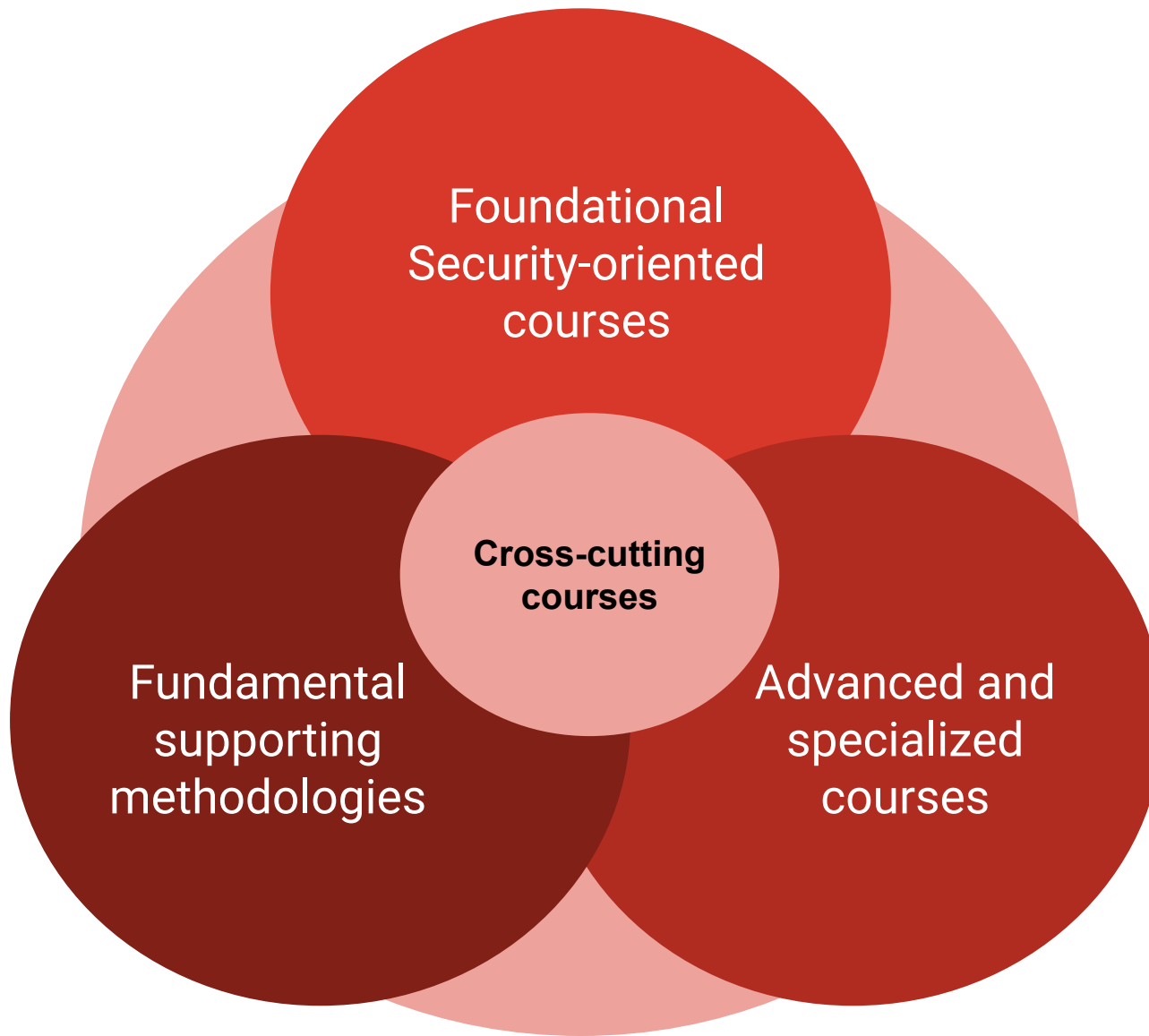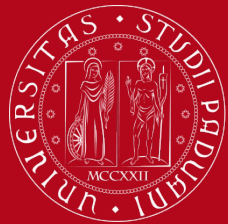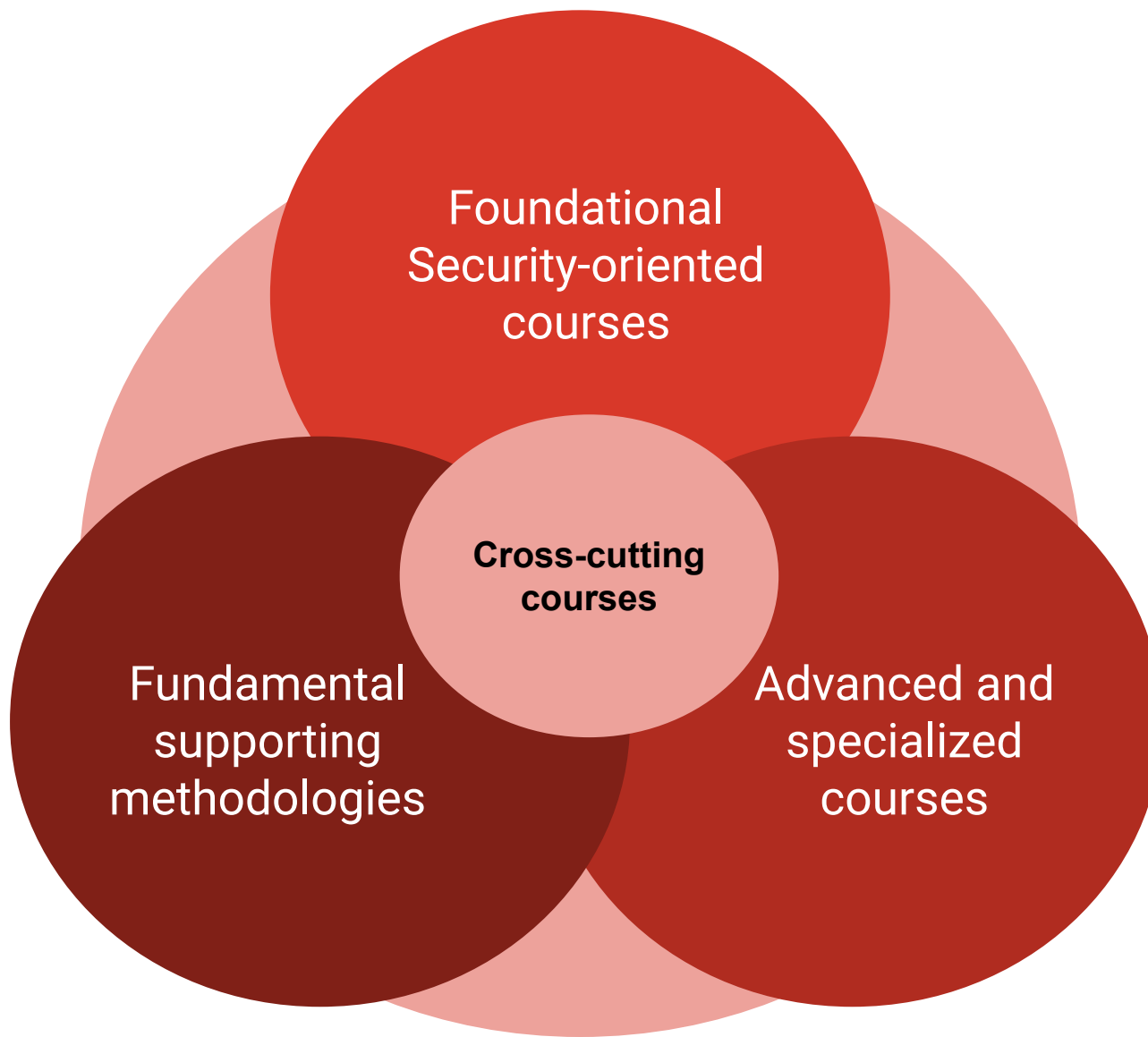
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- 12 ECTS among those listed in the program
  - **ETHICAL HACKING**
  - **SECURITY AND RISK: MANAGEMENT AND CERTIFICATIONS**
  - **MOBILE SECURITY**
  - **QUANTUM CRYPTOGRAPHY AND SECURITY**
  - **QUANTUM INFORMATION AND COMPUTING**
  - **SOFTWARE VERIFICATION**
  - **CYBER-PHYSICAL SYSTEMS AND IOT SECURITY**
  - **PRIVACY PRESERVING INFORMATION ACCESS**
  - **GAME THEORY**
  - **FOUNDATIONS OF DATABASES**
  - **WEB APPLICATIONS**
  - **FORMAL METHODS FOR CYBER-PHYSICAL SYSTEMS**
  - **METHODS AND MODELS FOR COMBINATORIAL OPTIMIZATION**
  - **WIRELESS NETWORKS**
  - **VISION AND COGNITIVE SYSTEMS**
  - **INTERNET OF THINGS AND SMART CITIES**
  - **BIG DATA COMPUTING**
- **12 ECTS completely at the student's choice**

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- **Adversarial Machine Learning**
  - The course provides an overview of the main security threats to machine learning systems; real-world learning systems will be examined, their vulnerabilities will be assessed, and defences will be proposed to mitigate the effectiveness of the attacks. Several case studies of attacks and defense strategies will be presented during the course, including attacks against Spam detection filters, PCA detector of traffic anomalies, the AOL data leak, and the Netflix prize attack.

- **Security of Advanced Networking and Services**
  - The course consists of series of lectures, illustrating advanced topics in Cybersecurity with the support two international experts:
    - ***Gene Tsudik***, *University of California, Irvine*
    - ***Cristina Nita-Rotaru***, *Northeastern University*
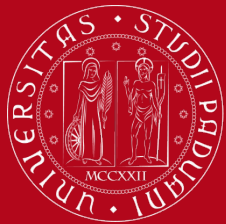
- We have designed a solid study program which blends together *computer science*, *ICT engineering*, & *psychology/economics/law competences* to offer you

  - Strong background on core security topics

  - Solid knowledge of underlying technologies, methodologies, and principles

  - 360 degree understanding of cross-disciplinary implications of security aspects!
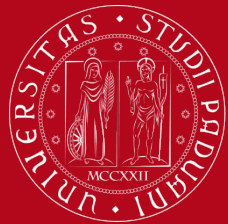
How about English?

1) 3 CFU
2) TAL B2 Speaking
   a) A check for suitability, a threshold exam
   b) You may have a pre-existing certification
3) Not "a course"
   a) But there are support courses available
   b) shared with other curricula (science, engineering,...)
4) A web page with information about last year courses and exams is available
   a) http://cla.unipd.it/attivita/corsi/corso-tal-b2-speaking/

A short video to introduce this topic:

https://mediaspace.unipd.it/media/t/1_g21xm7v7

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Did you know that you can enjoy for free the University Museums collections?

The **largest university scientific museum in Italy!!**

11 Museums!

Museum of Nature and Humankind

Botanical Museum

Museum of Education

Museum of Geography

The "Enrico Bernardi" Museum of Machines

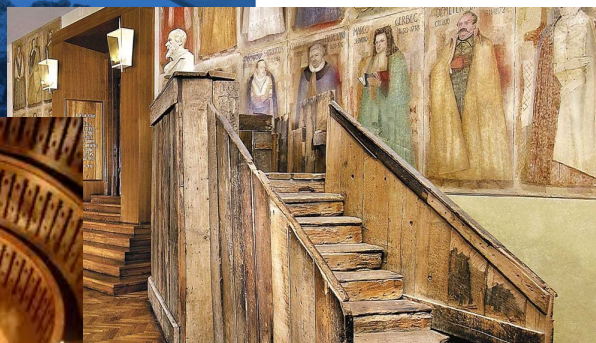Museum of Archaeological Sciences and Art

Giovanni Poleni Museum

Museum of Astronomical Instruments

Educational Museum of Veterinary Medicine

Morgagni Museum of Anatomy

Olivi Museum

More info at:

https://www.unipd.it/en/bo

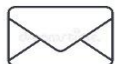https://www.musei.unipd.it/en

www.unipd.it/en

www.cybersecurity.math.unipd.it

Facebook: universitypadova

Instagram: unipd

Academic-related enquiries: **cybersecurity@math.unipd.it**

WATCH OUR VIDEO "10 reasons for studying in Padua"
www.youtube.com/watch?v=ZI6vKRe6PWc