Get a French touch of engineering !

Bordeaux INP
ENSEIRB
MATMECA

INITIATIVE D'EXCELLENCE Université de Bordeaux

COMMUNAUTÉ D'UNIVERSITÉS ET ÉTABLISSEMENTS D'AQUITAINE

Welcome

at Bordeaux Institute of Technology

ENSEIRB-MATMECA

- 5 reasons to come
- Our exchange program
- Study with us
- How to apply ?

France

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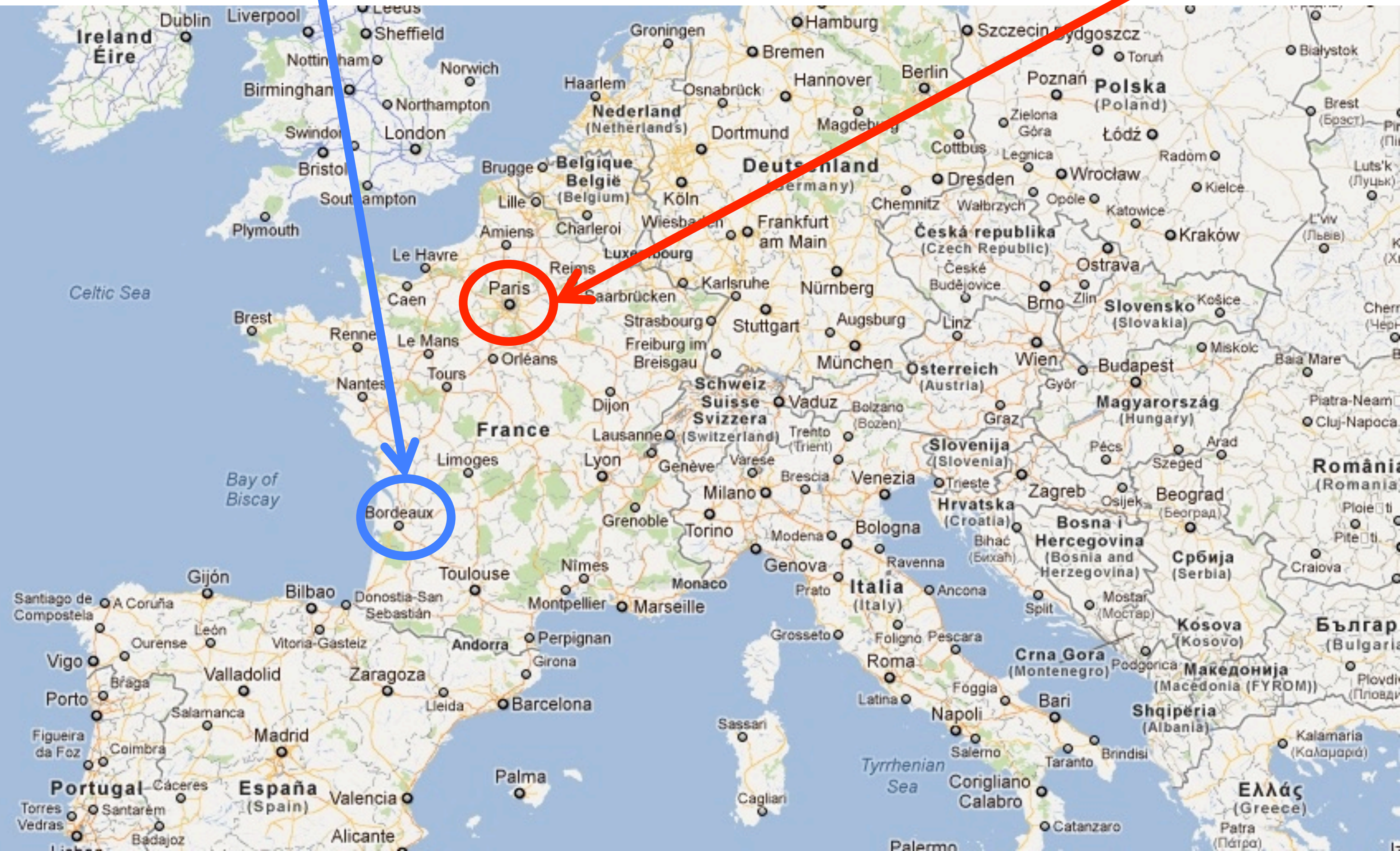
Bordeaux in France



Bordeaux

- **A 1 million inhabitant urban area**
  - Capital city of South West of France
  - 100 000 students in higher education
- **A world heritage city**
  - 2000 years of history
- **A easy way of life**
  - Ground transportation, safety
  - International city

Bordeaux

- **3 hours to Paris**
  - High Speed train (TGV)
- **3 hours to the Pyrenees mountains**
  - Ski resorts
- **45 minutes to Atlantic Ocean**
  - Surf !

Bordeaux has an international airport connected to most european cities (1 to 2 hour flight).

Bordeaux

- **Tremendous cultural life**
  - UNESCO classified city, concerts, cinemas, exhibitions, museums, parks, the « docks »
  - Soutwest way of life
  - Wine …

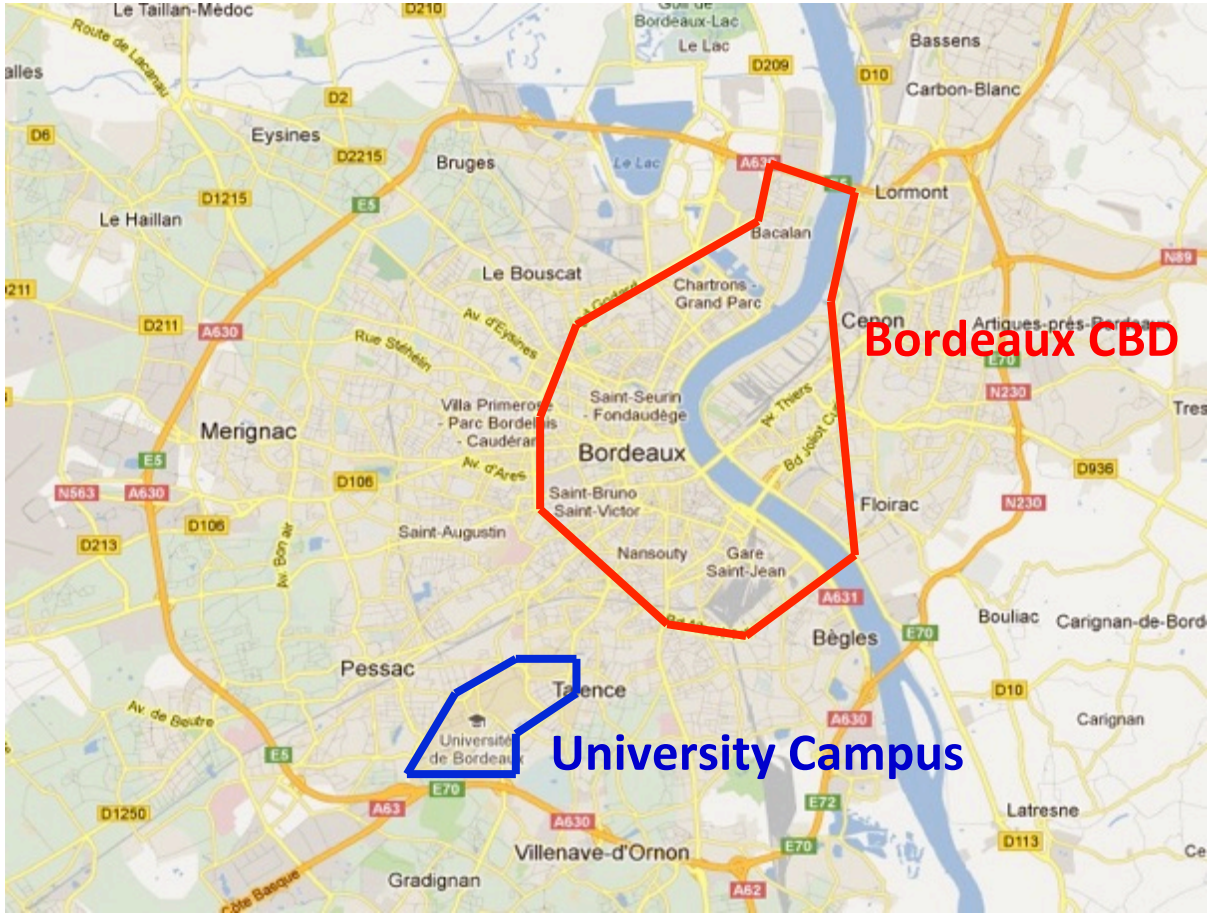
Bordeaux vineyards

- Bordeaux, one of the most famous wine in the world
- 120 000 acres of vineyards
- 8000 « châteaux » = (open day, tasting, events,…)
- 12000 wine-makers !!!

Bordeaux, silver coast

- **Atlantic ocean**
  - A straight coast, only sand with a direct access to the Atlantic Ocean
- **Do you like surfing ?**
  - Great waves, the place to go surfing in Europe (Lacanau, Hossegor, Biarritz)
- **Do you like oysters ?**
  - The bay of Arcachon with the highest sand dune in Europe (Dune du Pyla)

The University Campus



- **Close to the city**
  - 15 minutes by tram
  - 1 tram every 5 minutes
- **A single campus**
  - The University of Bordeaux
  - Bordeaux Institute of Technology

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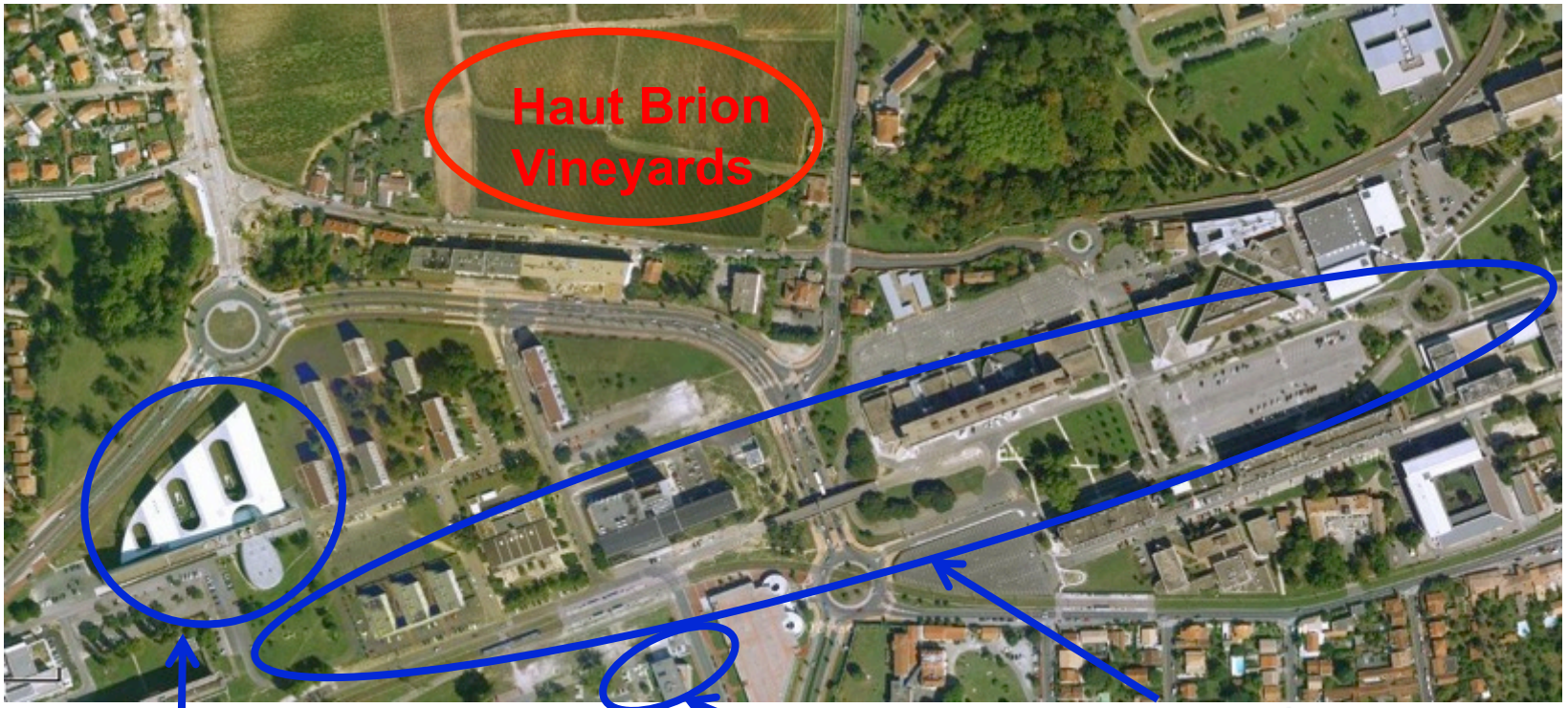
The Science and Technology Campus



Bordeaux Institute of Technology

French Research Agency

Bordeaux Institute of Technology

- **8 Graduate Schools of Engineering**

ENSEIRB-MATMECA (founded in 1920)
Graduate School of Electronics, Computer Science, Telecommunications, Mathematics and Mechanics

ENSCBP (founded in 1892)
Graduate School of Chemistry, Biology and Physics

ENSEGID (founded in 1989)
Graduate School of Environment, Geo-resources and engineering for sustainable Development

ENSTBB (founded in 1994)
Graduate School of Biotechnologies

ENSC (founded in 2003)
Graduate School of Cognitics

ENSGTI* *(founded in 1991)*
Graduate School of Industrial Technologies Engineering

ISABTP* *(founded in 1996)*
Graduate School of Construction Industry and Civil Engineering

BSA* *(founded in 1963)*
Graduate School of Agronomic sciences

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Bordeaux Institute of Technology

Some key figures …

- **Public institution (tuition fees : 600€/year)**
  - Access by high level entrance exam (high selection)
  - 280 faculty members
  - 8 graduate schools
  - 19 departments incl. 6 by apprenticeship
  - 12 joint research centers
- **3.200 students (4 campuses)**
  - 920 students graduated each year
  - 60 students associations
  - 9 to 14 months of work placement
  - 4 Masters of Science
  - 6 doctoral schools
  - 311 Ph.D students
- **More than 130 international partners**
  - Avg. 12% international students

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ENSEIRB-MATMECA

- **Some key figures**
  - Founded in 1920
  - 1500 students
  - 120 permanent professors
  - 4 research laboratories
  - 350 non-permanent teachers
  - 18 M€ annual budget

- **Engineering programs**
  - Electrical Engineering
  - Computer Science
  - Mathematics and Mechanical Engineering
  - Telecommunications

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Computer Science Dept.

- Software Engineering
- Parallel computing, Regulation et Distributed computation
- Networking and Distributed Systems
- Robotics
- European Studies in Software Verification *(Eng)*

Mathematics & Mechanics Dept.

- Fluid mechanics and energetics
- Material and structures
- Scientific computation

Telecom Dept.

- Digital Comunicating Systems
- Networks and Telecommunications Software Engineering
- Networking and Communicating embedded Systems

Electronics Dept.

- Circuits and Integrated Systems
- Radio and Telecommunications Systems
- Signal and Image Processing
- Automatics ,Mecatronics, Automobile, Aeronautics and Space
- Embedded Systems

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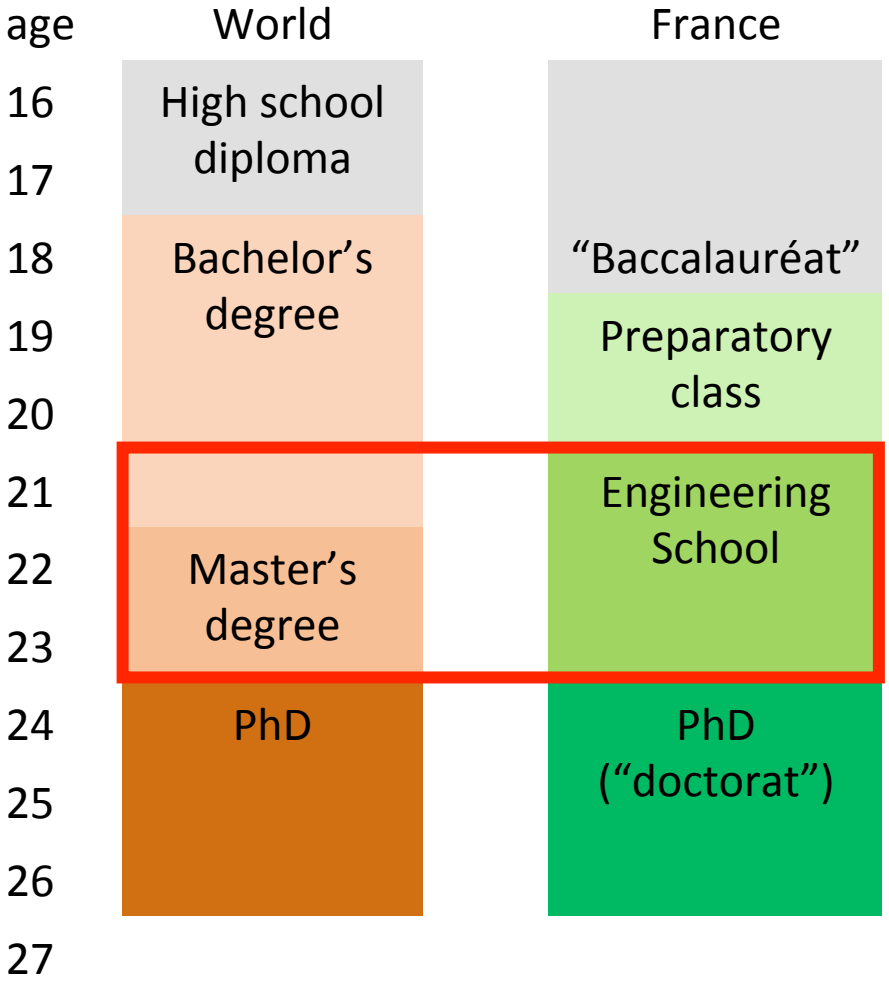
ENSEIRB-MATMECA



- **Graduate Engineering studies**
  - 3rd year of Bachelor
  - 1st and 2nd year of Master
  - Master by research or by course

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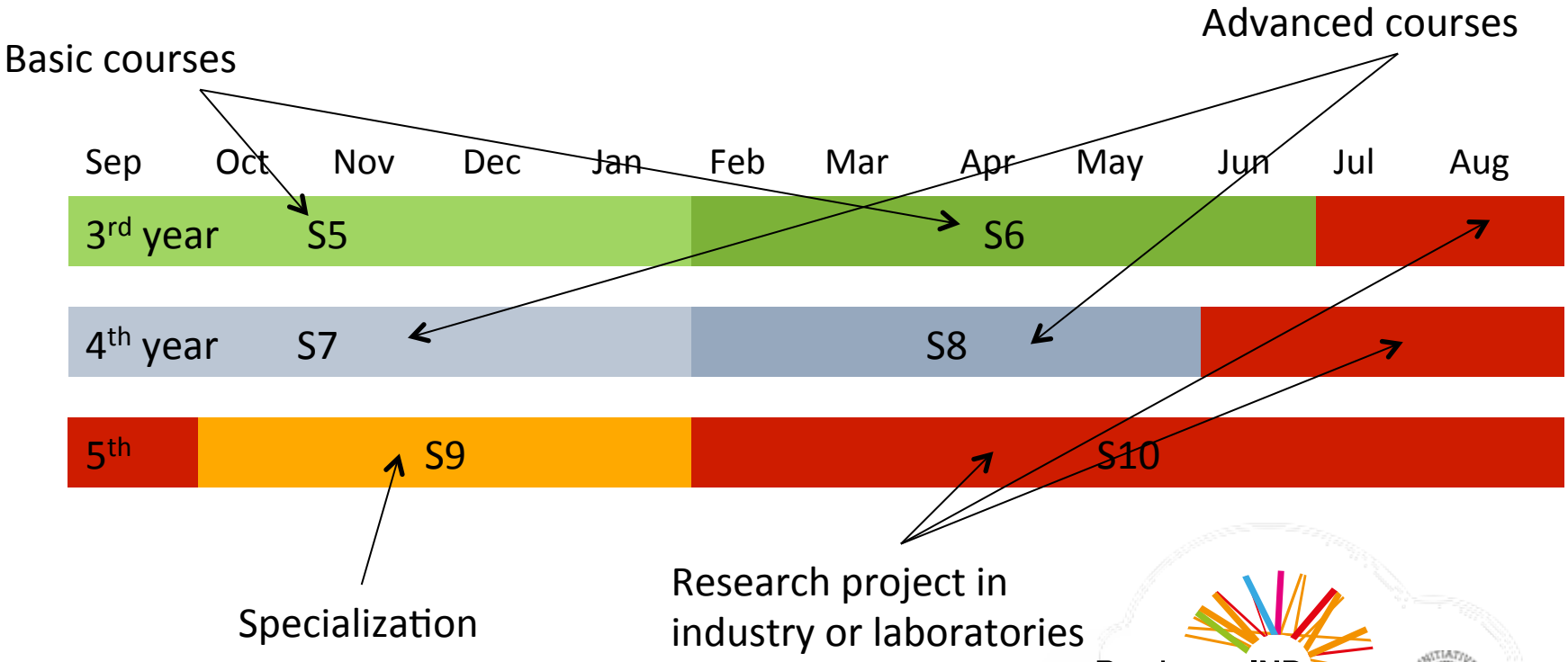
- **Training program overview**
  - 3rd year of Bachelor = 3rd year
  - 1st and 2nd year of Master = 4th and 5th year



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ENSEIRB-MATMECA

- **Technical content**
  - Broad coverage of basic concepts for each program

  99 ECTS, 1100-1200 hours
  - Specialized options linked to research and market opportunities

  25 ECTS, 280-300 hours
- **Non-technical content**
  - English + a second foreign language (choice among 7 languages including chinese, japanese)
  - Management courses

  26 ECTS, 500 hours

Welcome

at Bordeaux Institute of Technology

ENSEIRB-MATMECA

- **5 reasons to come**
- Our exchange program
- Study with us
- How to apply ?

5 reasons to come at Bordeaux

1 Get a valuable scientific experience

Same credits, different way of getting it 2

3 Bordeaux, a liveable city

An gateway for industry placement in Europe and in France 4

5 Go out of your confort zone

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Go out your confort zone at Bordeaux

Welcome

at Bordeaux Institute of Technology

ENSEIRB-MATMECA

- 5 reasons to come
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Our exchange program

I want go to Bordeaux during …

- Less than 2 months: **Short Term Program**
  - **Research project** in our research centers
  - Bordeaux Institute of Technology **Summer school**
- Less than 6 months: **Mid Term Program**
  - **Research project** in our research centers
  - **Academic Semester** (Master Coursework)
- A complete year: **Long Term Program**
  - Semester + research project = Master of Science

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Our exchange program

I want go to Bordeaux for …

- **A research project**
  - You study in our research centers
  - You work with reknown scientist
  - You can get credits !
- **An academic semester**
  - You can benefit from specialized international master courses taught in english
  - You can get french lessons for free
  - You get credits, but a different way …
- **A Master of Science**
  - If you go for a semester and a research project,

  you get a Master of Science

  from Bordeaux Institute of Technology

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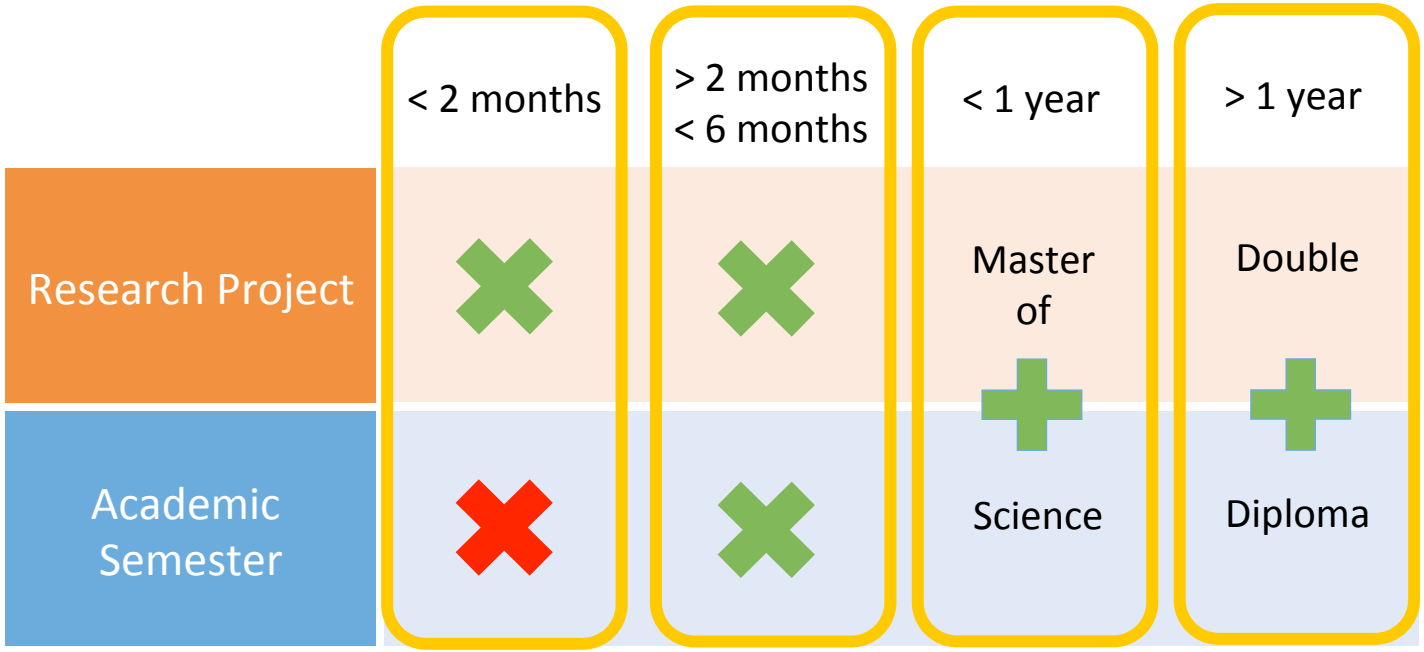
Our exchange program

A brief overview



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ET ÉTABLISSEMENTS
D'AQUITAINE

Welcome

at Bordeaux Institute of Technology

ENSEIRB-MATMECA

- 5 reasons to come
- Our exchange program
- **Study with us**
- How to apply ?

Study with us
-
Your Research Project

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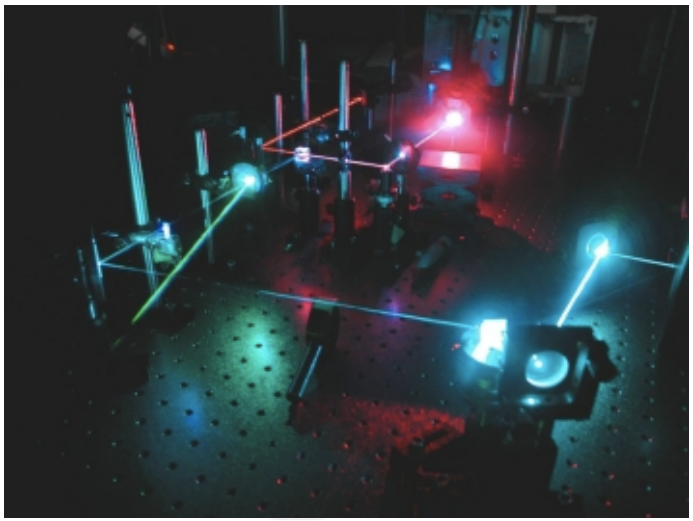
Study with us – Your Research Project

- **What is a research project ?**
  - It is an **internship** with a supervisor,
  - on **a subject** or area in one of our 4 associated laboratories,
  - depending on **your backgrounds**, home study requirements and **personal taste**.
- **When, Which, What, How ?**
  - When can I come for a research project ?
    - Whenever you want except August.
  - Which level of study ?
    - 3rd year undergraduate students (bachelor) or higher (master).
  - What length ?
    - From one week up to 6 months.
  - How can I find a supervisor ?
    - An interactive list of potential supervisors is available online.



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IMS Laboratory – Material & System Integration

- **Research in**
  - Materials, Components,
  - Circuits, Signals,
  - Homogeneous and heterogeneous system modeling,
  - Design and reliability analysis

- **Over 400 staff including 140 professors and researchers**
- **www.ims-bordeaux.fr**

Engineering area

Electrical Engineering

Computer Science

Mathematics and Mechanical Engineering

Telecommunications

LaBRI: Bordeaux Computer Research

- **Research in**
  - Combinatorics and algorithms,
  - image and sound, languages, systems and networks,
  - formal methods, bioinformatics and data visualization, algorithms for high performance digital applications

- **Over 320 staff including 148 professors and researchers**
- **www.labri.fr**

Engineering area

Electrical Engineering

Computer Science

Mathematics and Mechanical Engineering

Telecommunications

IMB: Bordeaux Mathematics Institute

Institut de Mathématiques de Bordeaux

- **Research in**
  - Algebraic and mathematical scientific computing
  - number theory, geometry, analysis, partial differential equations and mathematical physics,
  - probability and statistics, scientific calculation and modeling, biomathematics

- **250 staff including 152 professors and researchers**
- **www.math.u-bordeaux1.fr**

Engineering area

Electrical Engineering

Computer Science

Mathematics and Mechanical Engineering

Telecommunications

I2M: Institute of Mechanics and Engineering

- **Research in**
  - Mechanics and engineering from materials to civil engineering,
  - including design, manufacturing, transfers and control

- **330 staff including 133 professors and researchers**
- **i2m.u-bordeaux.fr**

Engineering area

Electrical Engineering

Computer Science

Mathematics and Mechanical Engineering

Telecommunications

INRIA: National Research Institute in Informatics & Automatics

- **Research in**
  - A public science and technology institution dedicated to computational sciences
  - Inria, the French National Institute for computer science and applied mathematics, promotes “scientific excellence for technology transfer and society”.
- **320 staff including 123 professors and researchers**
- **www.inria.fr**

Engineering area

Electrical Engineering

Computer Science

Mathematics and Mechanical Engineering

Telecommunications

Study with us – Your Research Project

- **Bordeaux Institute of Technology responsabilities**
  - Available Research Information
    - a list of professors and research project for students
  - Selection Process
    - Select appropriate candidate and notify the result
  - Accommodation
    - Arrange accommodation for the participants
  - Others
    - Provide a certificate for research project on the completion of program
    - Supervise the students during the research project period
    - Financial support

- **Your responsabilities**
  - Prepare your application 3 months before starting research project
    - www.enseirb-matmeca.fr or international.eirb.fr
  - Provide all required documentation in due time
    - Administration takes time (visa, accomodation …)

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Study with us
-
Your Academic Semester

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Study with us – Your Academic Semester

- **What is an academic semester ?**
  - A semester is a **complete program** of courses.
  - You cannot mix courses from different specialties or options, nor from different year levels.
  - You may eventually remove some courses from a semester programme, provided both your home institution tutor and ENSEIRB-MATMECA international department coordinator agree that there is no pre-requisite problem.
- **When, Which, What, How ?**
  - When can I come for an academic semester ?
    - From **October to end of January** or from **February to end of May**
    - Apply **before 15th of May** or **15th of October**
  - Which level of study ?
    - 3rd year undergraduate students (bachelor) or higher (master).
  - What language ?
    - English for international master, otherwise French
  - How can I find a semester ?
    - A course program is available online www.enseirb-matmeca.fr or international.eirb.fr

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COMMUNAUTÉ D'UNIVERSITÉS ET ÉTABLISSEMENTS D'AQUITAINE

Study with us – Your Academic Semester

- **International Master taught in english**
  - Get access to a specialized course program
  - From October to January
  - Apply before 15th of May
  - Includes:
    - Practical demonstration
    - Specialists or worldwide reknown scientists seminars
  - A one-month research project can be added in September

- **National Course Program taught in french**
  - French level B2 required
  - 1 semester from **September/October to end of January** or from **February to end of May/June**
  - A complete year from September to June
  - Need more details ?
    - A course program is available online www.enseirb-matmeca.fr

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International Master Program

Get a French touch of engineering !

1- International Master of Software Verification

- Formal methods applied to software verification and analysis

2- International Master of Software Engineering

- Advanced training in computer science engineering to design, understand, develop and maintain complex software systems

3- International Master of Radio and Telecommunication Systems

- Advanced training in Technologies, Circuits and Systems for Radio and Telecommunications

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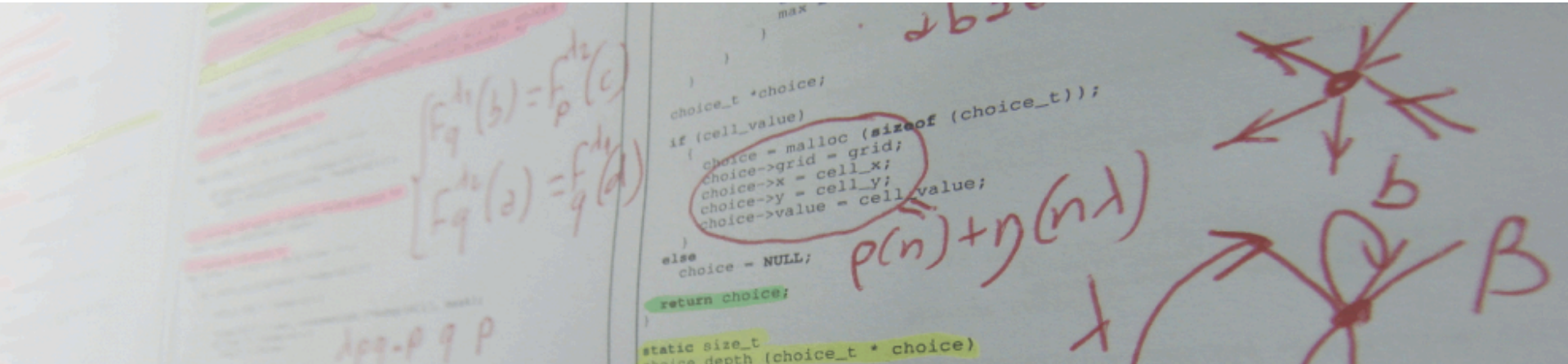
1- Master of Software Verification

- **International Master of Software Verification**
  - The focus of this Master program is formal methods applied to software verification and analysis.
  - This Master degree gives you the opportunity to work either in the software industry as project leader or in a computer science laboratory as researcher.
  - 'Formal Methods' and 'Software Verification' open to a quite wide-spectrum of activities and topics which can be both extremely theoretical or applied to practical industrial cases. As a non-exhaustive list of topics, here are some examples:
    - software quality (code and process audit),
    - compiler design (with static-analysis and abstract interpretation),
    - protocol verification (model-checking and theorem provers),
    - computer security (proofs of non-interference, data leakage, …),
    - development of critical systems (aerospace, transportation, banks, …), …

http://essv.labri.fr/

1- Master of Software Verification

- **Prerequisites**
  - have completed the first year of a Master of science degree in Mathematics and/or Computer Science or equivalent
  - have a good proficiency in written and spoken English: level B2 is absolutely required.
- **Description**
  - Modeling techniques
  - Games and controller synthesis
  - Modern type-oriented constructions in programming languages
  - Software verification
  - Research project and seminars
  - B-Method / Formal design of software with TLA+



2- Master of Software Engineering

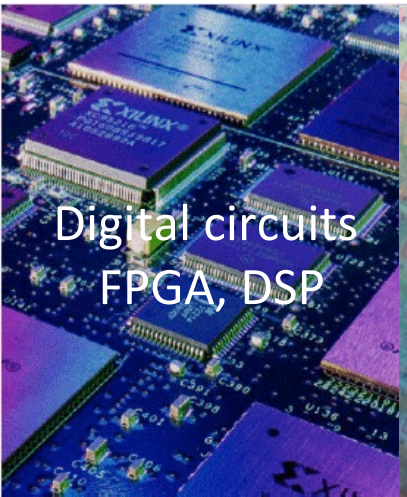
- **International Master of Software Verification**
  - Offered by the Department of Computer Science.
  - Advanced training in computer science engineering to design, understand, develop and maintain complex software systems.
  - Courses in:
    - fundamental computer science
    - practical courses and projects
  - Large scope of careers and jobs in computer science companies, IT departments, banks, IT consulting companies among other sectors.
  - Graduate students are prepared for jobs such as
    - IT project manager,
    - Software development engineer,
    - Data manager,
    - Software architect,
    - R&D engineer …

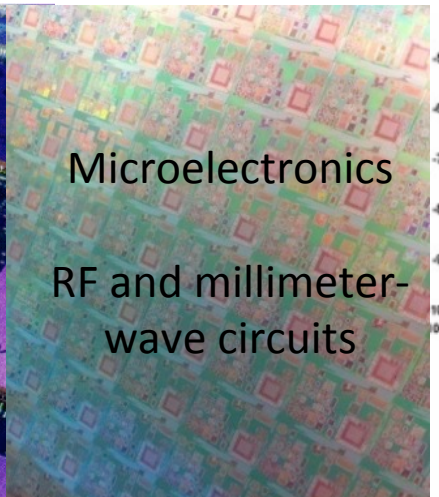
2- Master of Software Engineering

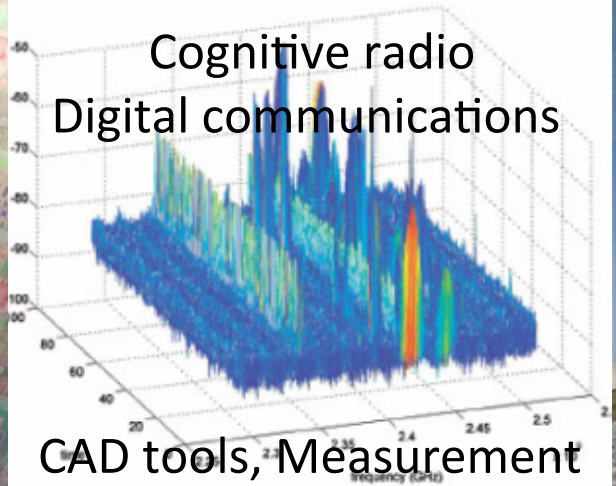
- **Prerequisites**
  - Algorithms, Programming, Java, Databases, SQL, Basics of modelling computer software applications.
  - English (at least B2 level)
- **Description**
  - Software Methodologies: Software project management and Information systems, Software testing
  - Design and Validation of Software Systems: Software design – B method
  - Data Engineering: Management and Analysis of Big Dat
  - Distributed and Mobile Software: Multi-tiers software architectures (Project), Mobile application development
  - Personalization: Software methods and tools, Formal design of software systems, Advanced programming techniques
  - Language and Management for Engineers: Business simulation, Languages

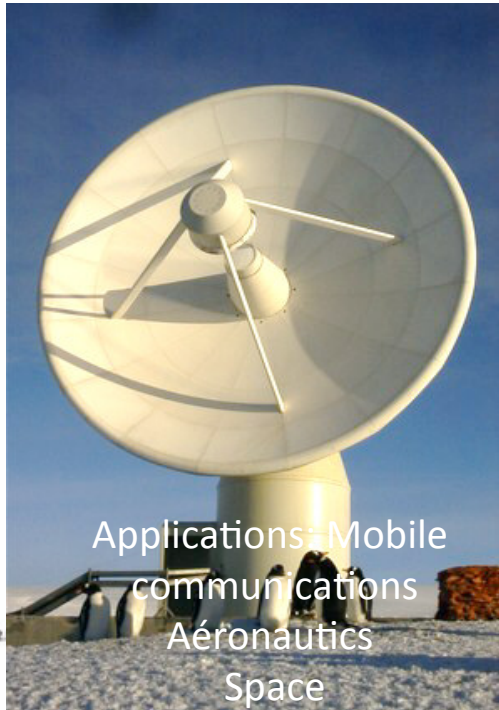
3- Master of Radio and Telecommunication Systems

- **International Master of Radio and Telecommunication Systems**
  - From antenna to base-band: Analog circuits – RF – Digital
  - From Circuit to System: interaction between Circuits and Systems
  - Signal processing for electronics: Signal transmission, Spectrum management
  - Advanced training in Technologies, Circuits and Systems for Radio and Telecommunications
    - Analog and digital design at circuit and system level
    - Circuits and systems characterization
    - Quality and security analysis methods for transmission links

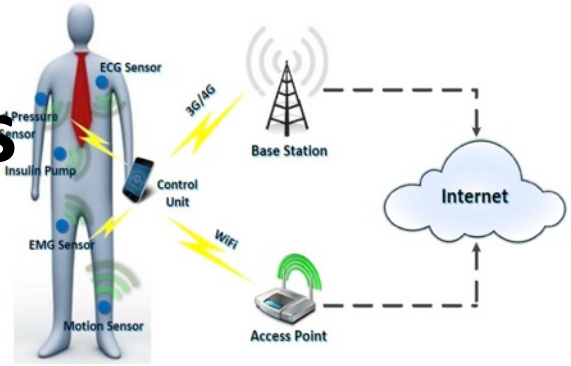




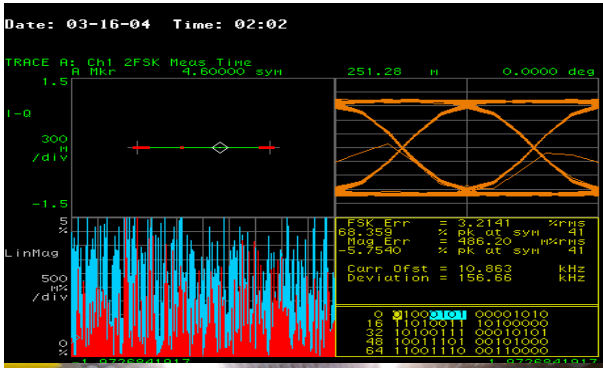


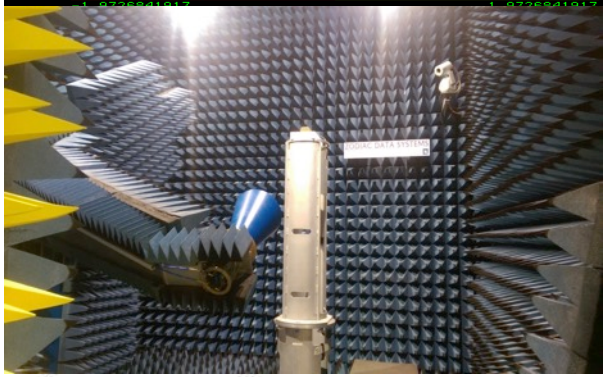


3- Master of Radio and Telecommunication Systems



- **Prerequisites**
  - Analog and digital electronics basis
  - English (at least B2 level)
- **Description**
  - RF and mmW circuits: Antenna, Power amplifier, RF measurement, RF circuits design
  - Communication systems: Advanced Design System CAD project, Optoelectronics, RF Systems
  - Signal processing and power management: DAC/ADC, base-band signal processing, Power management, System on chip/co-design
  - Radio-communications: Advanced digital communications, Hardware security, Software-defined radio, Cognitive radio
  - Microelectronics: integrated technologies, oral presentation in conference training, RADAR project





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3- Master of Radio and Telecommunication Systems

- **International speakers**
  - Academics: EPFL, Ecole Polytechnique Montréal, UQAM, ETS Montréal, University of Limoges, ISEP, SupCom Tunis, University of Saint-Etienne, LAAS-CNRS, Monash University, University of Calgary
  - Industrials: STMicroelectronics, THALES ALENIA SPACE, THALES SYSTEMES AEROPORTES, CEA-Leti, Freescale, Orange, Keysight

- **Research Projects and Job offers**
  - Circuit design
    - Power amplifier linearization, Texas University
    - EM simulation of CMOS integrated balun, ST, Tours
    - Behavioral model for AMS & RF circuits, ST, Grenoble
    - RF frequency multiplier with very low phase noise, Thales SA Pessac
    - PLL design, CEA-LETI, Grenoble
    - Millimeter-wave power VCO, STMicroelectronics, Crolles
  - Communication systems
    - RF driver on CORTEX for RF 868MHz transmitter, Homeriders Systems, Gradignan
    - RF long range low power, Telecom Design
    - Waveform generation for unmanned airborne, Thales Pessac

KEYSIGHT TECHNOLOGIES
freescale semiconductor
life.augmented
THALES
orange
ims BORDEAUX
cea leti
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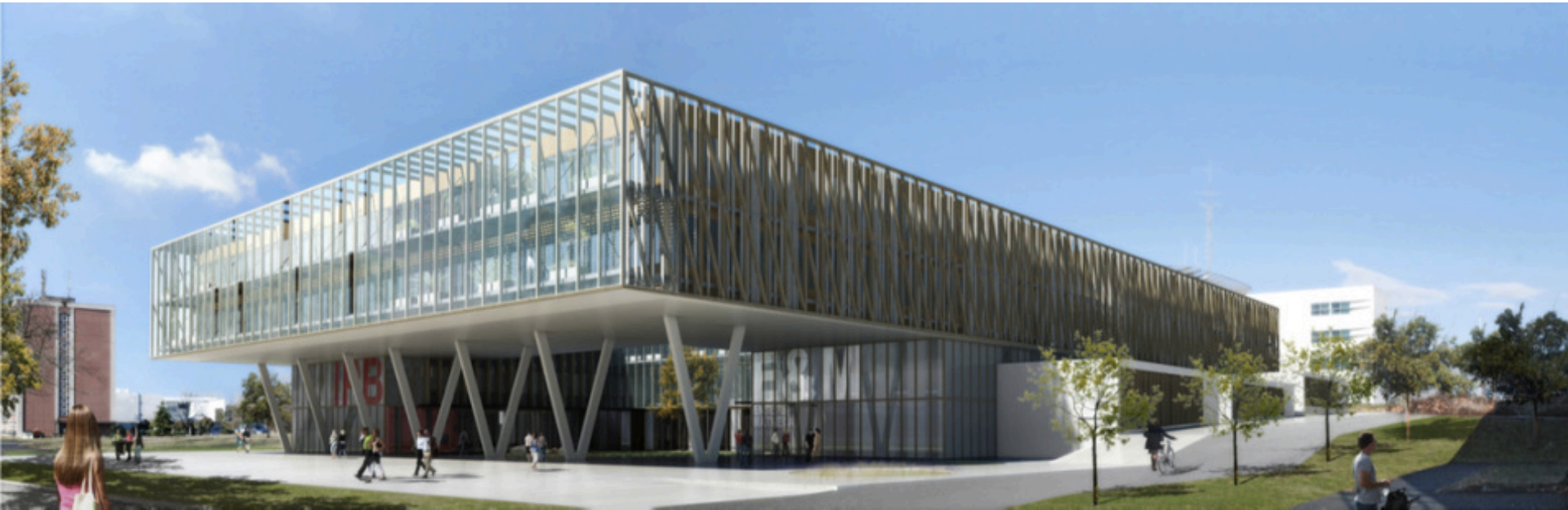
Master of Science

- **Master Coursework + a 6-month Research Project**
  - A complete year of study at Bordeaux Institute of Technology
  - You get access to industry placement program for your research project: a unique way of finding a future job
  - You get a diploma from Bordeaux Institute of Technology
- **Double Diploma**
  - At least 2 or 3 semesters and a 6-month research project



We welcome you !

- **We pick you up at the airport**
  - International student association takes care of you
- **Easy administrative procedures**
  - Follow-up of visa procedures
  - Quick enrolment in english
  - Efficient security registration process (access badge, research centers specific procedures, …)
- **We prepare your accommodation**
  - Based on your wishes, we can deal with french organism and lodging institutes to book your accommodation.
- **Have an idea of Bordeaux cost of life**
  - http://www.enseirb-matmeca.fr/international/student/budget

Welcome

at Bordeaux Institute of Technology

ENSEIRB-MATMECA

- 5 reasons to come
- Our exchange program
- Study with us
- How to apply ?

3 steps to apply

STEP 1

Application

- **Define your exchange program**
  - Contact your institution international office
  - Contact us to make an inquiry
  - Share your application with us as soon as possible (with resume, bio details, transcripts if required, …)
- **What are the deadlines ?**
  - **For a research project**
    - **3 month prior arrival**
  - **For an academic semester**
    - **15th of May (for a semester starting in September/October)**
    - **15th of October (for a semester starting in February)**

Bordeaux INP ENSEIRB MATMECA

COMMUNAUTÉ D'UNIVERSITÉS ET ÉTABLISSEMENTS D'AQUITAINE

3 steps to apply

STEP 1 2 *Selection*

- **If your institute is a partner**
  - All fees are waived
  - You complete your enrolment
  - We deliver required documentation for visa, accommodation, insurance, laboratories (if required).
  - Does my institute have an agreement with Bordeaux Institute of Technology ?
- **If your institute is not a partner**
  - Tuition fees apply
    - Details are provided on line
  - Once paid, we complete your enrolment.

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3 steps to apply

STEP 1 2 3

Arrival

- **Prepare your arrival**
  - We keep in touch with you till your visa and accommodation are granted,
  - We wait for your arrival details to pick you up,
  - We help you during your first days at Bordeaux (bank, cell phone, …).
- **Welcome at Bordeaux Institute of Technology**
  - We are very pleased to welcome you,
  - Enjoy your stay at Bordeaux, take the best part of it !

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CONTACT US

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