The Master Program on Navigation and Related Applications in Torino and the JEAGAL Project: a China-Europe cooperation

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Beijing - December 2006

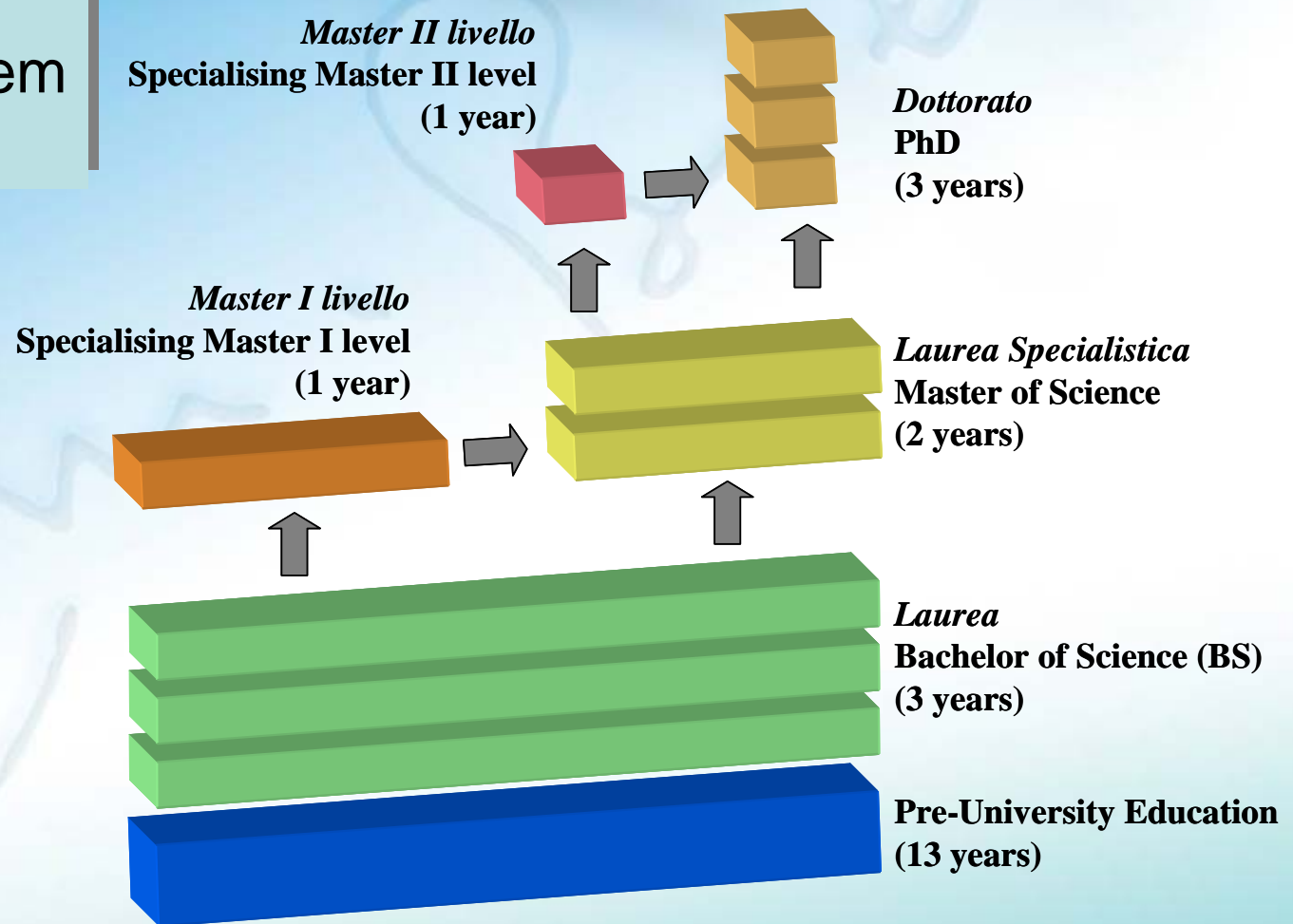# Outline

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Why a Master on GNSS ?

- GALILEO will be the European Global Navigation Satellite System expected to be in operation in 2010

- New and innovative services exploiting the positioning information

- Skilled personnel required for the development and management of innovative navigation-related applications

- Boost for research in the field in GNSS in Europe

need for educational programs on GNSS in Europe

Overview of the Master Program

The Italian University system after 1999

Master II livello
**Specialising Master II level
(1 year)**

Dottorato
**PhD
(3 years)**

Master I livello
**Specialising Master I level
(1 year)**

Laurea Specialistica
**Master of Science
(2 years)**

Laurea
**Bachelor of Science (BS)
(3 years)**

**Pre-University Education
(13 years)**

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Overview of the Master Program

Requirements for Admission

Students with a 5-year curriculum

Degree on:

❖ Information Technology

  ➢ Electronic Engineering

  ➢ Communications Engineering

❖ Aerospace Engineering

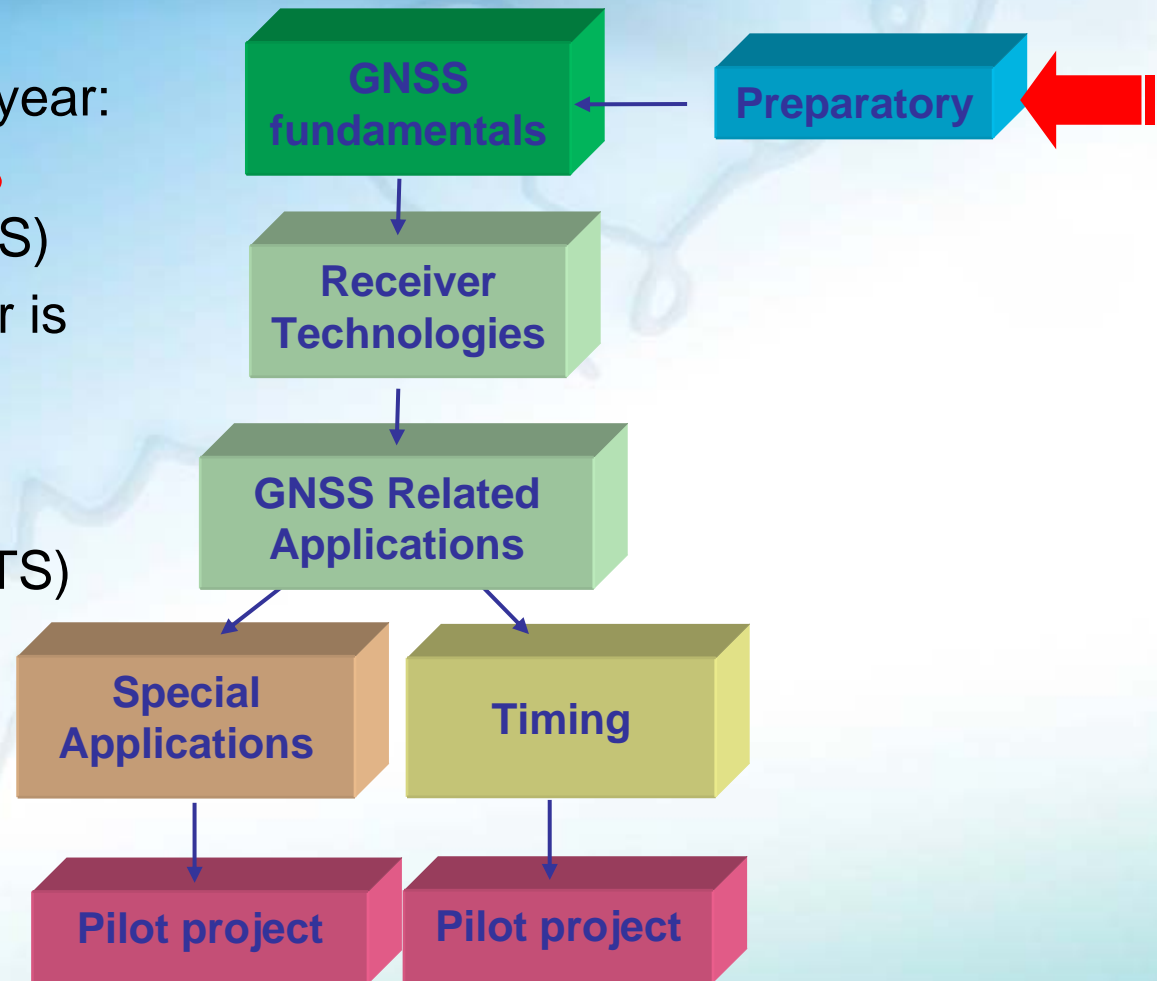❖ Environmental Engineering

Good knowledge of English language

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Overview of the Master Program

The Masters lasts 1 year:

➢ 12 classes over 3 quarters (50 ECTS)

➢ The fourth quarter is devoted to an internship to be carried out in a company (30 ECTS)

GNSS fundamentals

Preparatory

Receiver Technologies

GNSS Related Applications

Special Applications

Timing

Pilot project

Pilot project

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Overview of the Master Program

The Master is a joint initiative of

Politecnico di Torino

Istituto Superiore Mario Boella

with the cooperation of

INRIM Galileo Ferraris   and   UN OOSA

United Nations

Office for Outer Space Affairs

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Details on UN/Italy Fellowship

"*Istituto Superiore Mario Boella (ISMB) and Politecnico di Torino of Italy have established a Long Term Fellowship Programme which will provide scientists and specialists from developing countries with an opportunity to receive a Master Degree in Navigation and Related Applications.*"

United Nations Vienna, June 2004

The fellowship is therefore the possibility for *student selected by United Nations* to attend the Master

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Details on UN/Italy Fellowship

The agreement among Politecnico di Torino, ISMB and UN-OOSA covers the following aspects:

Contribution to the Master Curriculum definition

Financial Support

Master Promotion

Master Organization

Student Selection

Details on UN/Italy Fellowship

The ... Politecnico di Torino, ISMB and U... ...cts:

The program of the courses has been prepared by the Masters Scientific Committee and discussed with the UN-OOSA representatives

Contribution to the Master Curriculum definition

Financial Support

Master Promotion

Master Organization

The Masters programme has been organised with the co-operation of officers of UN-OOSA

...udent Selection

Details on UN/Italy Fellowship

The agreement among Politecnico di Torino, ISMB and UN-OOSA covers the following aspects:

The Masters and the Fellowship initiatives have been promoted through the UN web site and in all the UN Educational Centres in the world

Financial Support

Master Promotion

Master Organization

Student Selection

5 students are selected yearly by UN through the UN Regional Educational Centres

Details on UN/Italy Fellowship

The agreement among Politecnico di Torino, ISMB and UN-OOSA covers the following aspects:

Contribution to the Master Curriculum definition

Financial Support

The 5 students selected by UN receive a scholarship by ISMB to attend the Master

Master Organization

Student Selection

The first two editions

First Edition: students from 9 countries trained

Country	Project	Students
Pakistan	UN	1
Sri Lanka	UN	1
Jordan	UN	1

Country	Project	Students
Argentina	ALPIP	1
Brazil	ALPIP	1
Ecuador	ALPIP	1

Country	Project	Students
Italy	Other	8

Country	Project	Students
Indonesia	ASIAN	1
Vietnam	ASIAN	1

The first two editions

Country	Project	Students
Ghana	ISMB/UN	1
Iran	ISMB/UN	1
Algeria	ISMB/UN	1
Nigeria	ISMB/UN	1

Country	Project	Students
Mexico	ALPIP	1

Country	Project	Students
China	JEAGAL	6
Vietnam	JEAGAL	4

Country	Project	Students
Italy	Other	2

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The JEAGAL Project

Joint European-Asian educational and application development programme on GALileo

- Funded by the European Commission under the Asia IT&C programme line

  "…foster economic growth and understanding between Europe and Asia through better awareness, access to, and use of Information and Communication Technologies"

The JEAGAL Project

Joint European-Asian educational and application development programme on GALileo

- It aims to increase co-operation between European and Asian research institutions

- It is focused on Global Navigation Satellite Systems (GNSS)

- Main interest is in Galileo, the future European GNSS

JEAGAL Objectives

- Contribute to the awareness on Galileo

  - ➢ Workshops

- Spread the knowledge of the new European GNSS in China and Vietnam

  - ➢ Galileo Labs

- Set up long lasting international cooperation

- Create a coordinated group of European experts (research and education) on GNSS

JEAGAL Activities

First phase

- Kick-off meeting in Torino (March 2005)

- Preparation and delivery of first round of workshops in China and Vietnam (June-July 2005)

Second phase

- 10 Asian candidates attend the Master on Navigation and Related Applications in Torino (October 05 – June 06)

JEAGAL Activities

Third phase

- Galileo Labs are set up at Asian Universities premises
- Candidates elaborate their thesis project: tools to be made available to all Galileo Labs
- Open learning material prepared

Fourth phase

- Second round of workshops in China and Vietnam (November 2006)

JEAGAL Partners

Italy Spain

China Vietnam

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JEAGAL Partners

Italy

• Istituto Superiore Mario Boella - Torino

• Politecnico di Torino

Spain

• Universitat Politècnica de Catalunya - Barcelona

China

• Southeast University - Nanjing

Vietnam

• Hanoi University of Technology

Istituto Superiore Mario Boella (ISMB)

- **Mission:** Empowerment of ICT research, high level training/education and business intelligence
- **Goals:**
  - Build an ICT national and international focal point
  - Promote a strong integration between ICT operators on highly innovative programs and projects
  - Achieve synergy between university and socioeconomic system

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Istituto Superiore Mario Boella (ISMB)

- **Activities**
  - Research
  - High Level Training and Education
  - ICT & Society

- **Labs in partnership with Politecnico**
  - e-Security
  - Photonics
  - Networking
  - Systems and Applications
  - Navigation
  - Wireless Technologies for multimedia
  - Nanotechnologies and microelectronics
  - Antennas and EMC

Politecnico di Torino

- The oldest Technical University in Italy (founded in 1859)

- About 24.600 students:
  - 17.900 Engineering

- Staff:
  - 863 professors & researchers

- 4 faculties in engineering with 24 curricula and degrees.

- 2 faculties in architecture with 7 curricula and degrees.
  - 18 Departments
  - 35 Doctoral school curricula

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Politecnico di Torino

International Curricula

2nd level Master in:
- Wireless Communications
- Optical Communications & Optoelectronics
- Navigation and Related Applications
- Management of Cultural Heritage
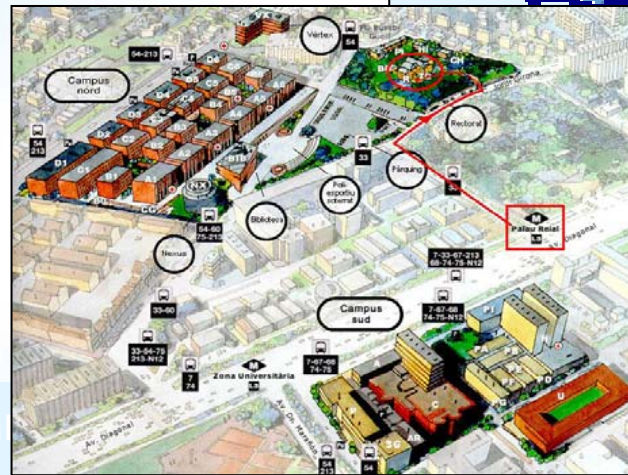- Town Planning for Developing Countries

European Joint Curricula

- LIFI: French-Italian 1st cycle degree in ICTs
- French-Italian-Swiss 2nd cycle degree in microsystems and nanotechnologies
- Institut Eurecom (Sophia Antipolis)
- Italian-Spanish-French-Irish 1st cycle degree in European Business with Technology
- French-Italian 2nd level Master on plastic materials

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Universitat Politècnica de Catalunya (UPC)

- Public institution.
- 3 Campus in different cities
- 22 Schools, 40 Departments, 4 Institutes
- Faculties: 2.500
- Students 35.000
- PhD students 2.700
- 47 Doctorate Programs

Campus Barcelona

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UPC offers a broad education in:

- Electrical Engineering
- Architecture
- Telecommunication Engineering
- Mathematics
- Computer Science Engineering
- Optics
- Civil Engineering
- Nautical Engineering
- Aeronautics (Air Navigation Engineering)
- ....

Southeast University (SEU)
is located in
Nanjing, Jiangsu Province

SEU main campus
is standing at
the center of Nanjing city

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SOUTHEAST UNIVERSITY

The relevant Education and Research Units in SEU supporting to the Institute of Navigation, Position & Instrumentation

- ❑ *Dept . Radio Engineering*

    - ❑ *State Key Lab. of Millimeter Waves*

    - ❑ *National Key Lab. of Mobile Communication*

    - ❑ *RF & Optical Integrated Circuits R&D Center*

    - ❑ *Signal & Information Processing R&D Center*

- ❑ *Dept . Electronic Engineering*

    - ❑ *Micro-electronics Eng. Center*

    - ❑ *Optic – electronics Eng. Center*

Hanoi University of Technology

- Established in 1956, the leading higher education institution in the field of science and technology

- At present, as a key university, HUT has . 1800 employees including 1500 Faculty members
- 25,000 undergraduate students 2000 graduate students

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Hanoi University of Technology

1. Faculty of Applied Mathematics
2. Faculty of Chemical Engineering
3. Faculty of Economics and Management
4. Faculty of Electronics and Telecommunications
5. Faculty of Electricity
6. Faculty of Engineering Education
7. Faculty of Information Technology
8. Faculty of Mechanical Engineering
9. Faculty of Metallurgy and Materials Technology
10. Faculty of Textile Engineering
11. Faculty of Part-time Training
12. Faculty of Foreign Languages
13. Faculty of Social Sciences
14. Department of Physical Education

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JEAGAL Results

Kick-off meeting

- Excellent interaction among participants
- Main guidelines for future actions elaborated
- Structure of workshops deeply analyzed

First round of workshops

- Great interest with consistent participation of academic and political authorities to opening sessions
- Large participation of students to all presentations
- Possible improvements:
  - ✓ material in Chinese/Vietnamese language

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JEAGAL Results

Master on Navigation

- All the students obtained the Master Degree
- One of the students received the Degree with Honour
- One of the students is now at the Oregon University (PhD)

Second round of workshops

- Held in November 2006
- Students that attended the Master delivered seminars at the workshops

JEAGAL Results

Follow-up

- Memorandum of Understanding already signed between ISMB and SEU

- Memorandum of Understanding between ISMB and Vietnamese Partner is being prepared

- A new project proposal submitted last October

to promote common research and training activities
in the coming years

Further information . . .

- **Master on Navigation and Related Applications**
  http://didattica.polito.it/master/navigation
  http://www.oosa.unvienna.org

- **JEAGAL Project**
  www.ismb.it/jeagal

- **EU-Asia IT&C Phase II**
  http://europa.eu.int/comm/europeaid/projects/asia-itc/cf/index.cfm