UNIVERSITY OF SPLIT

FACULTY OF ELECTRICAL ENGINEERING, MECHANICAL ENGINNERING AND NAVAL ARHITECTURE

(FESB)

PRESENTATION

Prof. Ivica Puljak

Cavtat, September 3rd 2007

FESB 1960 – 2007

- Founded 1960

- 1980 – New building

FESB - PRESENT

Organisation

- Departement of

  – Power engineering

  – Electronics

  – Mechanical engineering and naval architecture

  – Mechanical technology

  – Mathematics and physics

  – Center for common courses

- Computing center
- Library
- Office of the Dean
- 190 employees
  - 130 lecturers and researchers

Some statistics

Students:

Bachelor/Master	Vocational studies
Current number of students	
2000	800
Enrolled each year	
350	170
Graduated	
3400	1350
Master of science	PhD
75	27

Teaching stuff:

Full professors	26
Associated professors	17
Assistant professors	16
Assistents and lecturers	54
Technical support	18

Number of students graduating per year

University studies (diploma engineers = master)	
Electrical enginnering	110
Mechanical engineering	20
Computing	30
Industrial engineering	< 5 (first engineers this year)
Vocational studies (engineers)	
Electrical enginnering	40
Mechanical engineering	10
Naval architecture	< 5
Computing	20

Bologna process @ FESB

STUY LEVEL	YEAR	VOCATIONAL STUDIES

PhD
3 years
180 ECTS

Master
2 years
120 ECTS

Bachelor
3 years
180 ECTS

8.
7.
6.
5.
4.
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1.

Additional 30 ECTS

Bachelor
of vocational studies
2,5 years
150 ECTS

FESB
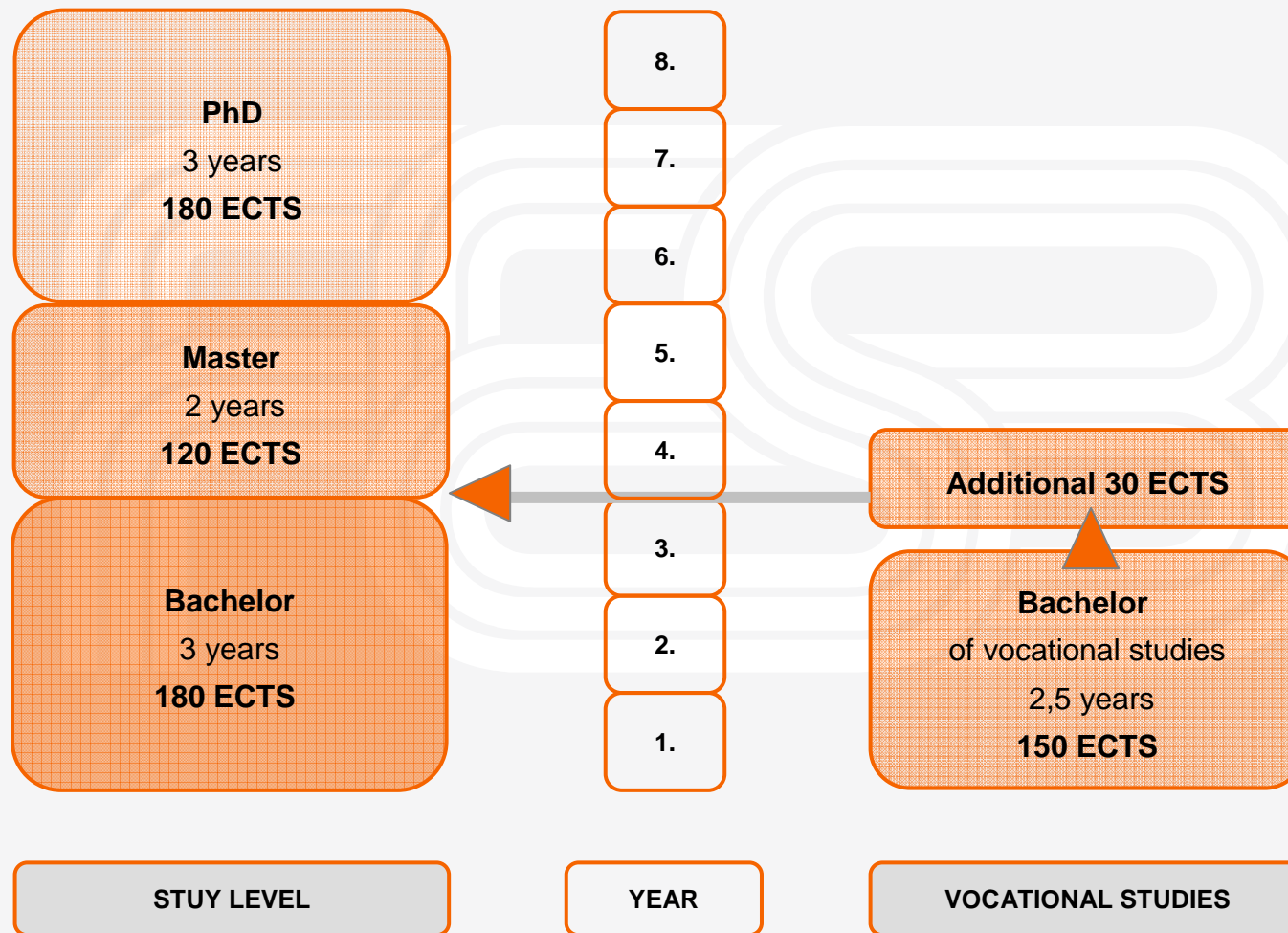
Bologna's implementation

- **Basic structure of studies**
  - ~ 5 courses per semester
- **Continous assestment:**
  - 2 – 3 mid term exams for each course
- **Four possibilities to take exams**
  - Defined by University legal framework
- **Emphasis on practical work**
  - Integrated into courses throught labs
  - Seminars, active learnings, communications skils
  - Project based teaching in final years
  - Projects with industry
- **Bachelor level competencies**
  - Design, implementation and maintenence of middle scale systems
  - Development of practical skills for industry
    - For students leaving after first cycle
  - Preparation for master study
- **Master level competencies**
  - Design, implementation and maintenence of large scale and sophisticated systems
  - Project leader and management skills
  - Preparation for scientific work
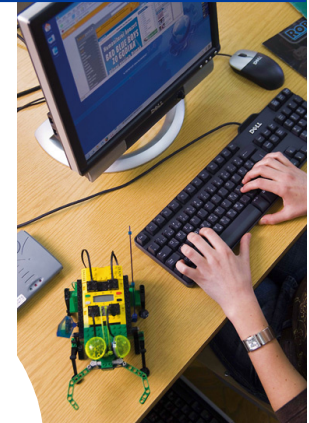
Electrical Engineering and Information Technology

- Freshmen per year: 200 (40 paying fees)

- **Bachelor of**

  - **ELECTRICAL ENGINEERING AND INFORMATION TECHNOLOGY**

- **Master of**

  - **AUTOMATICS AND SYSTEMS**

  - **ELECTRONICS AND COMPUTING ENGINEERING**

  - **ELECTRICAL ENGINEERING**

  - **COMMUNICATION AND INFORMATION TECHNOLOGY**

FESB

ICT in Master Studies

- **AUTOMATICS AND SYSTEMS**

  - **Artificial intelligence**

  - **Sensor networks**

  - **Operational research**

- **ELECTRONICS AND COMPUTING ENGINEERING**

  - **Long tradition: emerged from the Computer Science branch of Electrical Engineering**

  - **Emphasis in interface between Electrical Enginnering and Computer Science**

  - **Starting projects in nanotechnology**

- **ELECTRICAL ENGINEERING**

  - **Advance programming and communication**

- **COMMUNICATION AND INFORMATION TECHNOLOGY**

  - **Modern technologies: IP communications, Mobile communications, Numerical methods in communications, Multimedia systems, Digital TV and radio, …**

  - **Strong connection with with telecom industry**

    - **e.g. FESB is hosting Ericsson Nikola Tesla Research Lab**

Computing

- **Bachelor of**

  - **COMPUTING**
    - First year: general knowledge and basic programming
    - Second year: databases, algorithms, OOP, discrete systems …
    - Third year: networks, software engineering, distributed systems, bussines systems …

- **Master of**

  - **COMPUTING**
    - Advanced programming
    - Advanced distributed systems
      - e.g. research in GRID
    - Advanced arhitectures
    - Multimedia systems …
    - Diploma thesis – whole semester

Project based learning

- **Building project based skills**
  - **Starting with communications skills in 1st/2nd year**
  - **Many early courses with optional seminars**
- **Project based courses**
  - *Software engineering* and *Information systems design*
    - **Strong emphasis on projects**
    - **Students organized in teams**
      - **Team leader, project phases …**
      - **Connections with local companies strongly encouraged**
- **Diploma thesis in Computing organized as projects**
  - **With partners from industry**
  - **Through our scientific projects**
  - **Projects for our E-campus system**
- **Project examples**
  - **With Ericsson Nikola Tesla and Siemens**
  - **E-campus solutions: E-meetings**
    - **Solution for Faculty council meetings**

Mechanical Engineering

- **Bachelor of**

  - **MECHANICAL ENGINEERING**
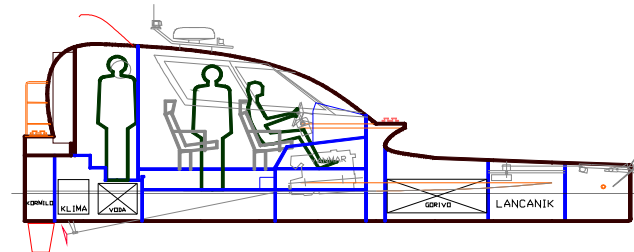   - Freshmen per year: 90

- **Master of**

  - **MECHANICAL ENGINEERING**

  - **Specialisations in:**

    - **ENGINEERING DESIGN**

    - **PRODUCTION ENGINEERING**

    - **COMPUTER AIDED DESIGN AND ENGINEERING**

Naval Arhitecture

- **Bachelor of**

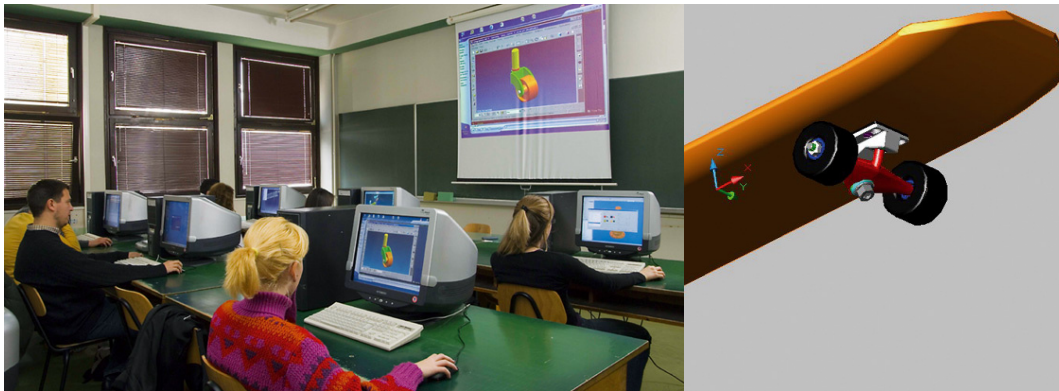   - **NAVAL ARHITECTURE**
        - Freshmen per year: 10

- **Master studies in Zagreb or Rijeka**

Industrial Engineering

- **Bachelor of**

  - **INDUSTRIAL ENGINEERING**
    - Freshmen per year: **30**   (15 paying fees)

- **Diplomski studij**

  - **INDUSTRIAL ENGINEERING**

- **Joint study with Faculty of Economics in Split** CfSplit
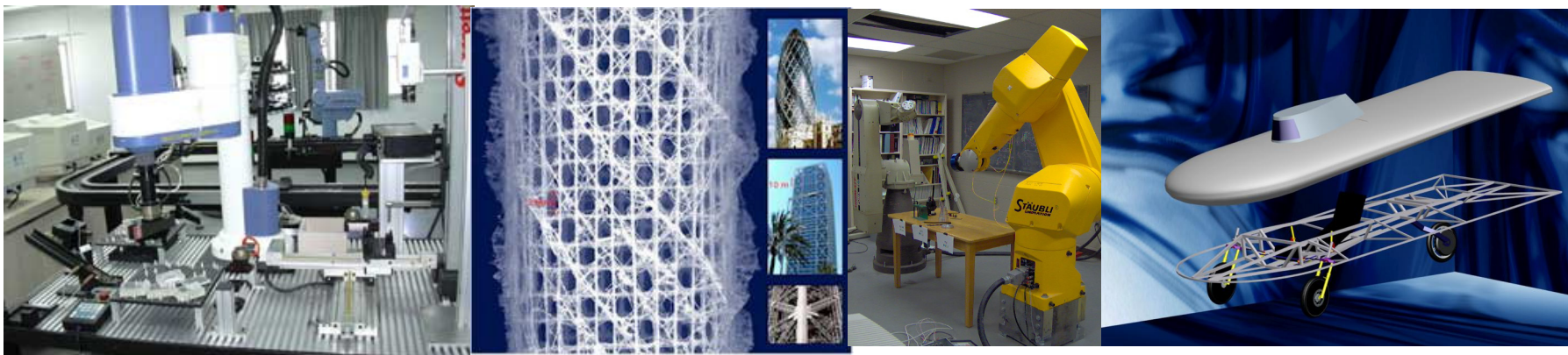
Doctoral studies

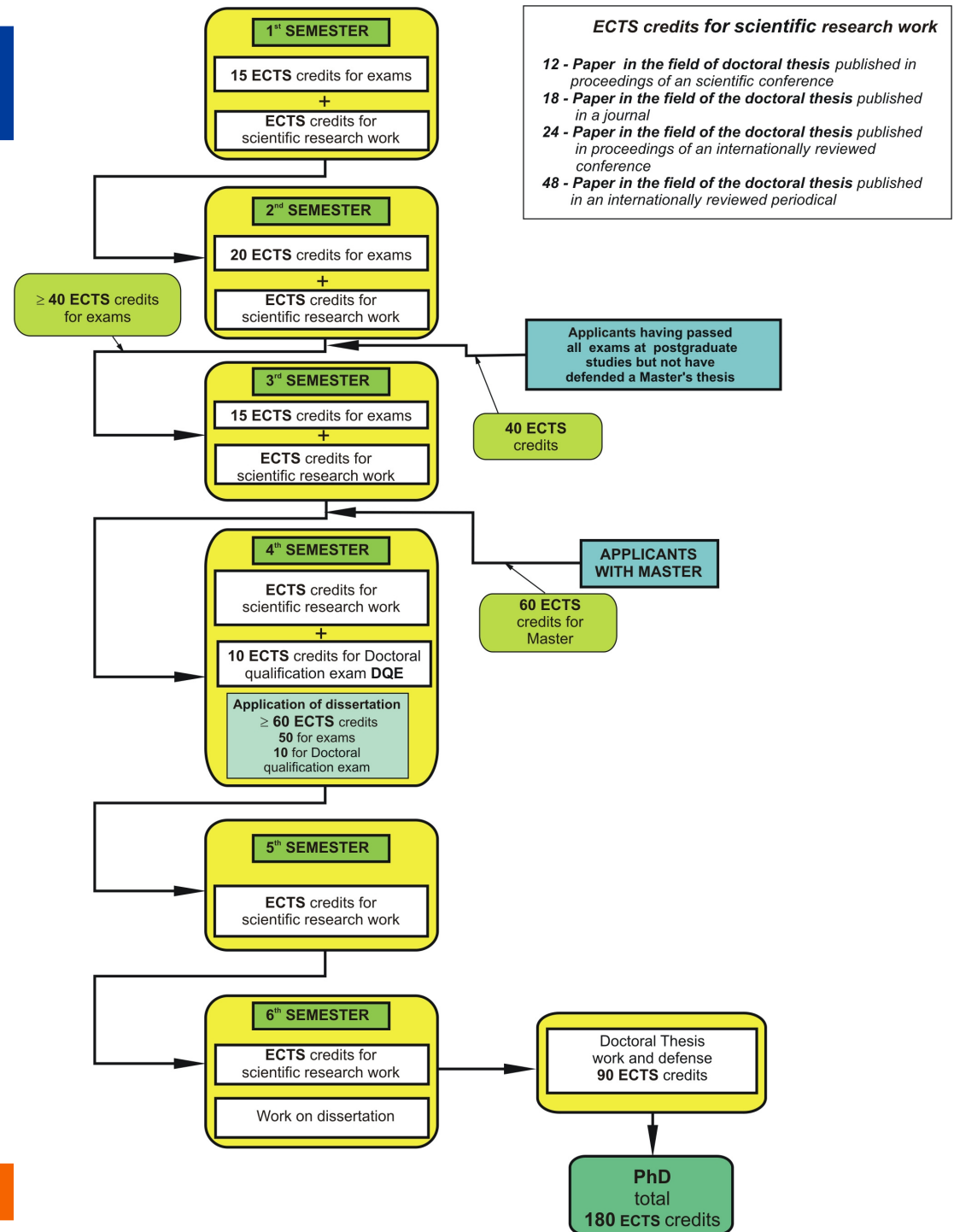- **ELECTRICAL ENGINEERING AND INFORMATION TECHNOLOGY**


- **MECHANICAL ENGINEERING**

Doctoral studies

- **About 90 elective courses**
  - **~ 40 % in ICT**
- **Flexibility:**
  - **Students design course list with supervisor**
  - **One obligatory course**
    - *Research methods*
  - **Nine elective courses**
- **Thesis subject public defense**
- **Strong emphasis on research**
- **Mobility:**
  - **Scholarships, interships, visits etc. strongly encouraged and supported**
  - **Recognition of ECTS from abroad**

ECTS credits for scientific research work

- **12** - *Paper in the field of doctoral thesis* published in proceedings of an scientific conference
- **18** - *Paper in the field of the doctoral thesis* published in a journal
- **24** - *Paper in the field of the doctoral thesis* published in proceedings of an internationally reviewed conference
- **48** - *Paper in the field of the doctoral thesis* published in an internationally reviewed periodical

1st SEMESTER

15 ECTS credits for exams
+
ECTS credits for scientific research work

2nd SEMESTER

20 ECTS credits for exams
+
ECTS credits for scientific research work

≥ 40 ECTS credits for exams

Applicants having passed all exams at postgraduate studies but not have defended a Master's thesis

3rd SEMESTER

15 ECTS credits for exams
+
ECTS credits for scientific research work

40 ECTS credits

4th SEMESTER

ECTS credits for scientific research work
+
10 ECTS credits for Doctoral qualification exam DQE

Application of dissertation
≥ 60 ECTS credits
50 for exams
10 for Doctoral qualification exam

APPLICANTS WITH MASTER

60 ECTS credits for Master

5th SEMESTER

ECTS credits for scientific research work

6th SEMESTER

ECTS credits for scientific research work

Work on dissertation

Doctoral Thesis work and defense
90 ECTS credits

PhD
total
180 ECTS credits

Vocational studies

- **ELECTRICAL ENGINEERING**
  - **Students per year:** **80** (50 paying fees)
- **COMPUTING**
  - **Students per year:** **60** (50 paying fees)
- **MECHANICAL ENGINEERING**
  - **Students per year:** **40** (20 paying fees)
- **NAVAL ARHITECTURE**
  - **Students per year:** **40** (20 paying fees)
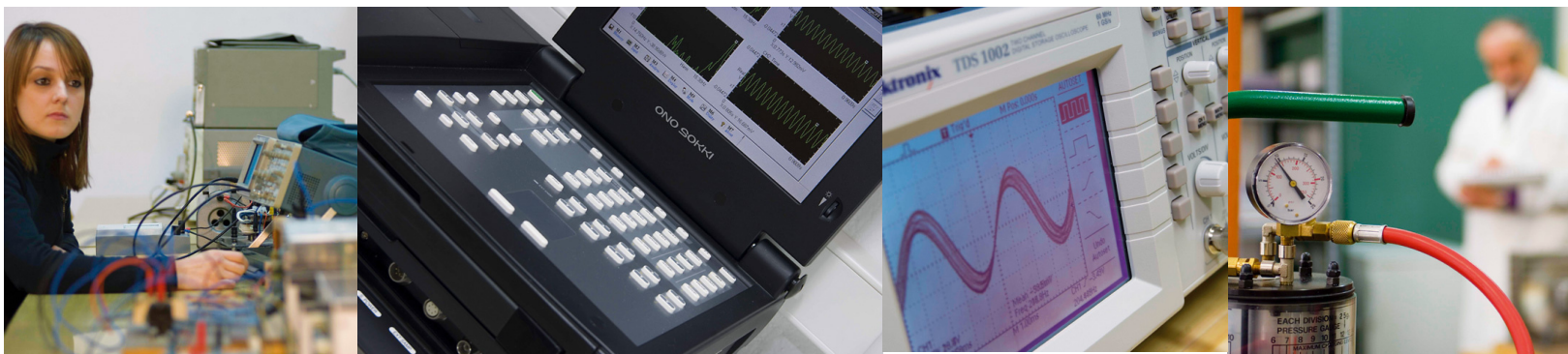
ICT in Education: E-learning @ FESB

- **Basic information for each course**
- **Material distribution**
- **Attendance module**
- **Grades**
- **Calendar, News**
- **Exams, quizzes, journals, wiki**
- **Forums**
  - **Student forum**
  - **'Ask vicedean' forum**
- **Widely accepted by students**

Computing equipment

- **One medium size computer classroom (30 PCs)**

- **Two small size computer classroom (20 PCs)**

- **Few more small computer labs (~ 10 PCs)**

- **Public terminals**

- **WiFi**

- **GRID cluster**

- **Teleconferencing room**

- **100 MB/s internal network with a 1 GB/s backbone**

- **Missing space for computer classroom**
  - **Problem being solved with new building**

- **FESB E-campus**

Research

Our researchers are

- Leaders of more than 40 scientific/technological/information technology projects sponsored by Ministry of science, education and sports
- *Participating in international projects:*
    - Croatian-Slovenian cooperation program (4 projects)
    - COST (Electromagnetic Compatibility in Distributed and Complex Sytems)
    - ALIS CROATIA - The British Council
    - CEEPUS
    - CERN (ALICE - A Large Ion Collider Experiment since 2001, CMS - Compact Muon Solenoid since 1994)
    - CROATEA (CRoatian Observatory At The Eastern Adriatic)
    - FP6 projects
- *Guest professors and guest scientists* at many universities and labs
    - University of Berkeley, Universität Stuttgart, Technische Universitat Berlin, Fraunhofer Institut fiir Betriebsfestigkeit, Columbia University, Imperial College of Science, University of Texas, Stanford University, Max Planck Institut, Universite Libre de Bruxelles, King's College London, University of Wiena, University of Wales, Emory University Atlanta, Paul Scherrer Institute, Ecole Polytechnique, UNIDU ...

Conferences and meetings

- SoftCOM

  International Conference on Software, Telecommunications and Computer Networks

- 2007 CERN School of Computing

- LHC (Large Hadron Collider) Days in Split

- Physics at LHC - 2008

- ATDC Advance Technologies for Developing Countries

- International Summer School of Automation

- Adriatic School on Particle Physics and Physics Informatics

- International Workshop on the Self Reproducing Solar Station

- International Workshop on Accurate Solution of Eigenvalue Problems

- 25th World Conference on Boundary Elements Methods

- Design

- Croatian mathematical congress

CERN School of Computing 2007

- **CERN School of Computing:** one of the best scientific computing schools in the world

- **Dubrovnik, 20 – 31 August 2007**

- **First time outside EU**

- **Duration:** two weeks

- **Format:**
    - **Morning lectures**
    - **Afternoon labs**

- **Final exam** (optional)

- 79 students and 20 lecturers
    - **Four Croatian students**

- **Long tradition:** since 1970

- **Main local organiser:** FESB
    - **Coorganisers**
        - **University of Dubrovnik**
        - **Croatian Academic and Research Network (CARNet)**
        - **University of Zagreb Computer Center (SRCE)**
        - **University of Split, Faculty of Science**

Other ICT educations @ FESB

- **Trainings organized by Croatian Academy and Research Network (CARNet)**

- **Cisco Academy**

  - **Six generation**

  - **70 students**

  - **Duration: 4 semesters, 80 hours per semester**

  - **4 CISCO certificates for each semester**

  - **Currently enrolling next generation**

Learning outcome: Example

- **FESB students won a Microsoft's Imagine Cup Award in 2005 and 2007**