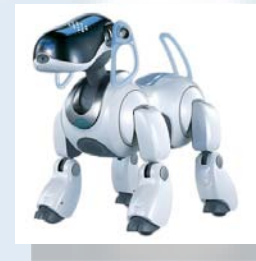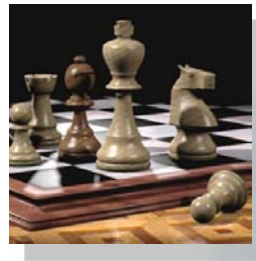# Master in Artificial Intelligence

2011 - 2012

Dept. de Llenguatges i Sistemes Informàtics, Facultat d'Informàtica de Barcelona (UPC)

Dept. d'Enginyeria Informàtica i Matemàtiques, Esc. Tècnica Superior d'Enginyeria (URV)

Dept. de Matemàtica Aplicada i Anàlisi, Facultat de Matemàtiques (UB)

Master in AI

Master in Artificial Intelligence

- It is an inter-university master, shared by three institutions:

  - **Universitat de Barcelona**
  - **Universitat Rovira I Virgili**
  - **Universitat Politècnica de Catalunya**

- Coordinating institution: UPC

- MAI issues: a professional student profile, a research and innovation student profile or both

- Academic load: 120 ECTS

- All courses are taught in English

- Academic duties: CAIMIA (Comissió Acadèmica Interuniversitària del Màster en Intel·ligència Artificial)

- Administrative duties: <u>Barcelona School of Informatics (FIB)</u>, Postgraduate School at UB and URV.

CAIMIA (1)

- The Master Academic Commission is mainly responsible for:

  - Admitting students.

  - Appointing a tutor for each student.

  - Deciding the complementary courses students must take.

  - Determining the academic calendar.

  - Determining the permanence regulation.

- The members of the CAIMIA during Academic Course 2011/2012 are:

  - Ulises Cortés (president).

  - Horacio Rodríguez (vocal).

  - René Alquézar (vocal).

  - Miquel Sànchez-Marrè (vocal).

  - Antonio Moreno (vocal), from URV.

  - Maite López (vocal), from UB.

  - Núria Castell (vocal), dean of the FIB.
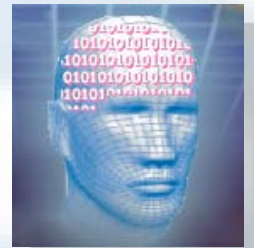
CAIMIA (2)

- Assistants to CAIMIA:
  - Assistant for Professors/Students Mobility [Alfredo Vellido]
  - Assistant for Master Thesis [Karina Gibert]
  - Assistant for MAI Promotion & Dissemination [Javier Vázquez]
  - Assistant for Dual Master Agreements [to be determined]
  - Assistant for Credit Recognition [to be determined]

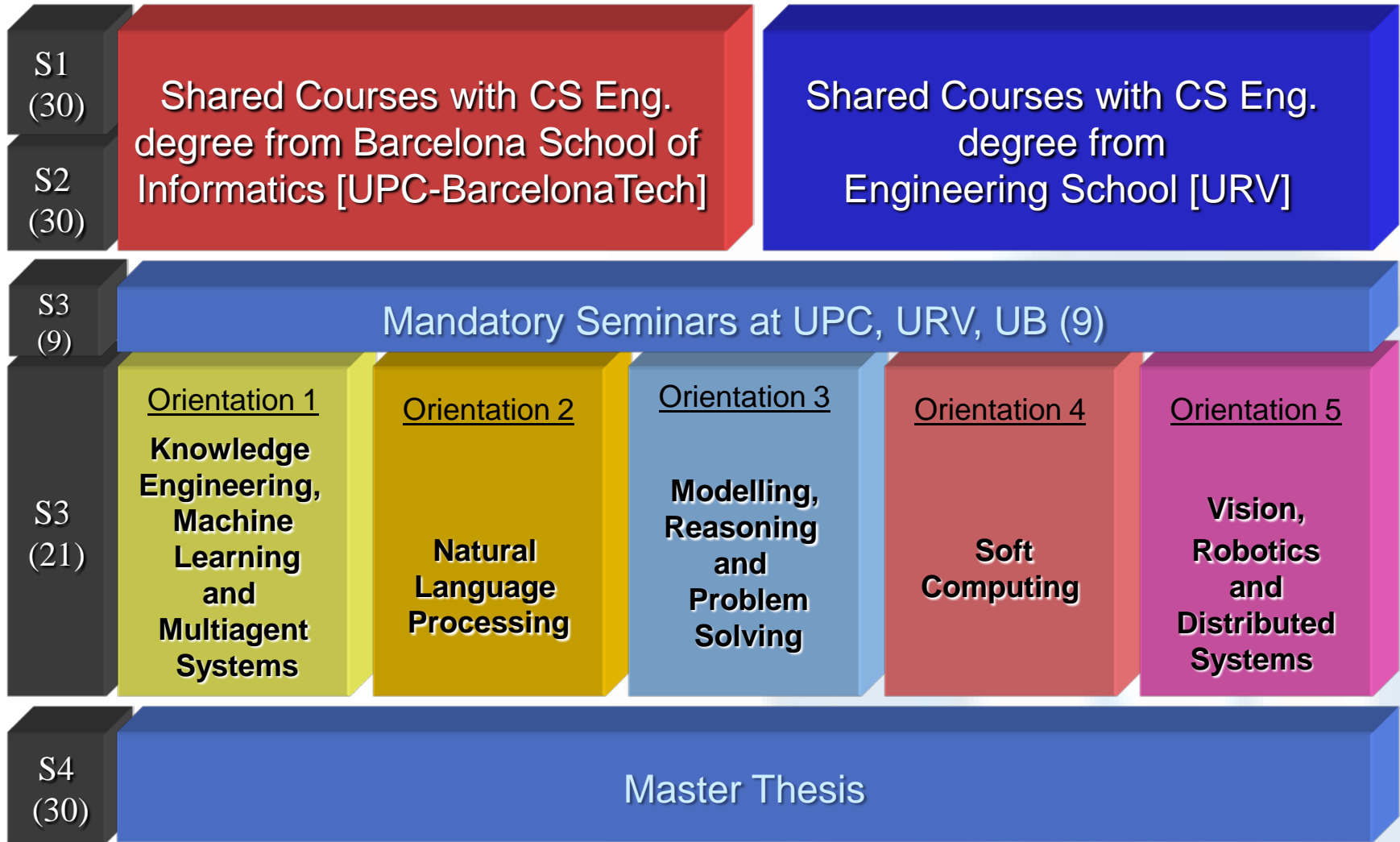- MAI Web page maintenance [Mrs. Mercè Juan]
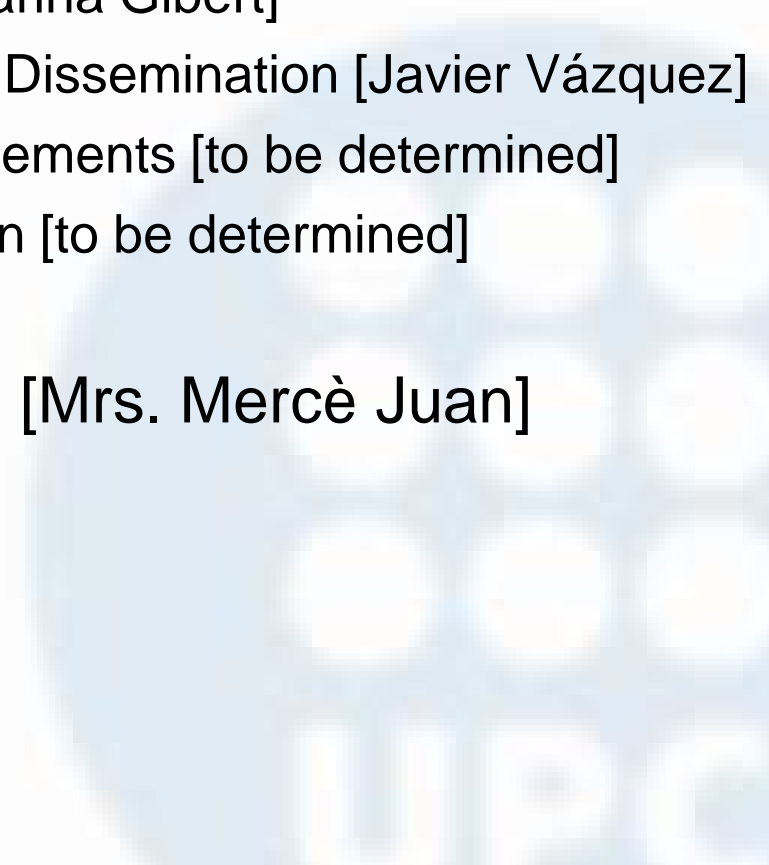
Contacts

- MAI Academic Responsible: Prof. Ulises Cortés
  - Phone: (+34) 93 413 78 42
  - E-mail: mai@lsi.upc.edu

- Academic Coordinator at URV: Antonio Moreno
  - Phone: (+34) 977 55 96 81
  - E-mail: coordinador.mia@urv.cat

- Academic Coordinator at UB: Maite López
  - Phone: (+34) 93 403 71 54
  - E-mail: master.ia@ub.edu

- Academic Management: Mercè Juan (LSI dept.)
  - Phone: (+34) 93 413 78 36
  - E-mail: merce@ugdsi.upc.edu

- Administrative Management: Maribel Gutiérrez (FIB)
  - Phone: (+34) 93 401 77 29
  - E-mail: maribel@fib.upc.edu

MAI Course Schedule

Master in AI

S1 (30)	Shared Courses with CS Eng. degree from Barcelona School of Informatics [UPC-BarcelonaTech]	Shared Courses with CS Eng. degree from Engineering School [URV]
S2 (30)		

S3 (9) — Mandatory Seminars at UPC, URV, UB (9)

S3 (21)

Orientation 1	Orientation 2	Orientation 3	Orientation 4	Orientation 5
Knowledge Engineering, Machine Learning and Multiagent Systems	**Natural Language Processing**	**Modelling, Reasoning and Problem Solving**	**Soft Computing**	**Vision, Robotics and Distributed Systems**

S4 (30) — Master Thesis

Mandatory Seminars

S1 (30)	Shared Courses with CS Eng. degree from Barcelona School of Informatics [UPC-BarcelonaTech]	Shared Courses with CS Eng. degree from Engineering School [URV]
S2 (30)		

Mandatory Seminars at UPC, URV, UB (9)

S3 (9)		

S3 (21)	Orientation 1 **Knowledge Engineering, Machine Learning and Multiagent Systems**	Orienta... **Natural Language Processing**	O...

| S4 (30)	Ma...

□ AI Seminar UB (SEM-UB) [UB]: *Normative and Dynamic Virtual Worlds* (January 23-27, 15 to 19)

□ AI Seminar URV (SEM-URV) [URV]: (One week in Mid April, 15 to 19)

AI Seminar UPC (SEM-UPC) [UPC]:
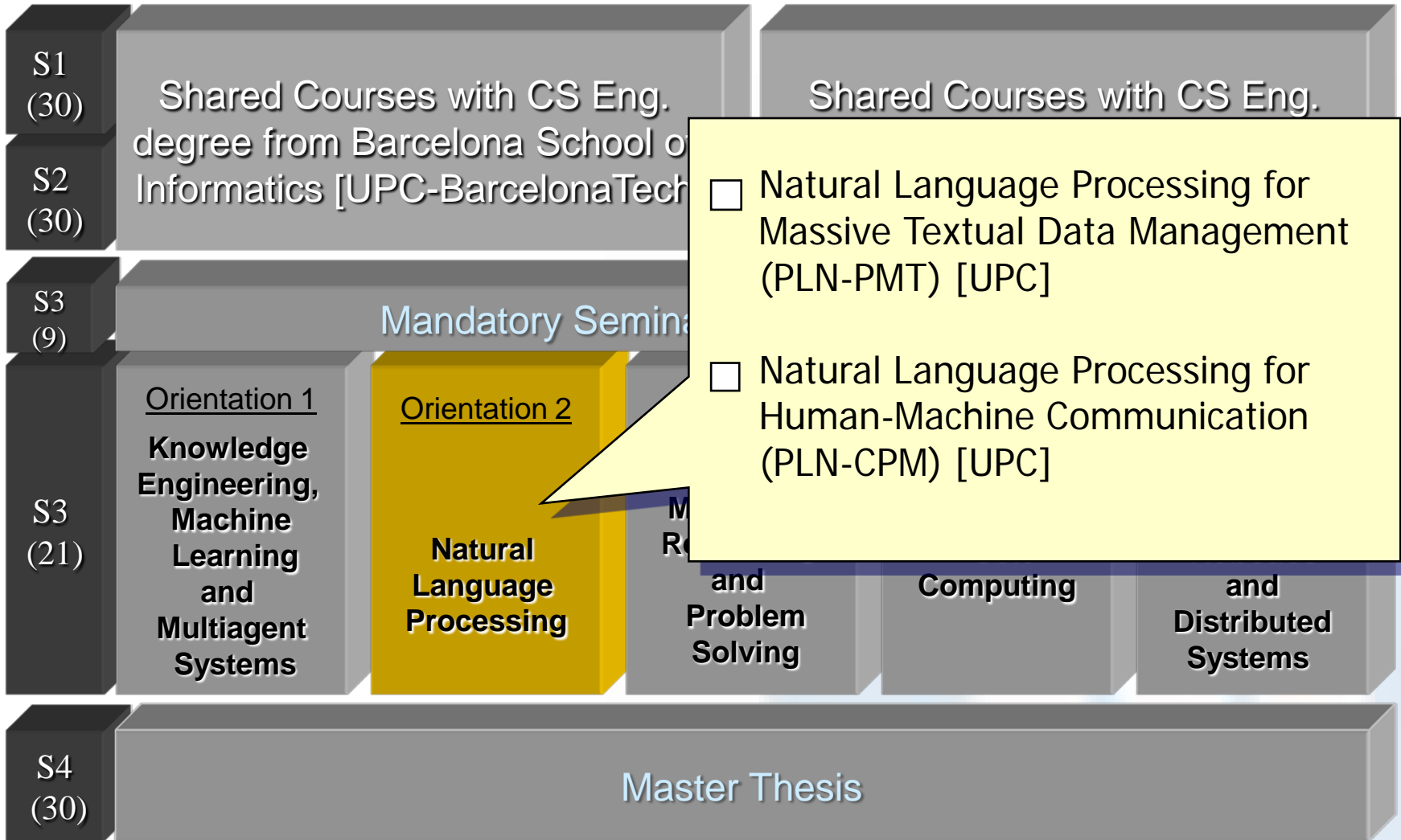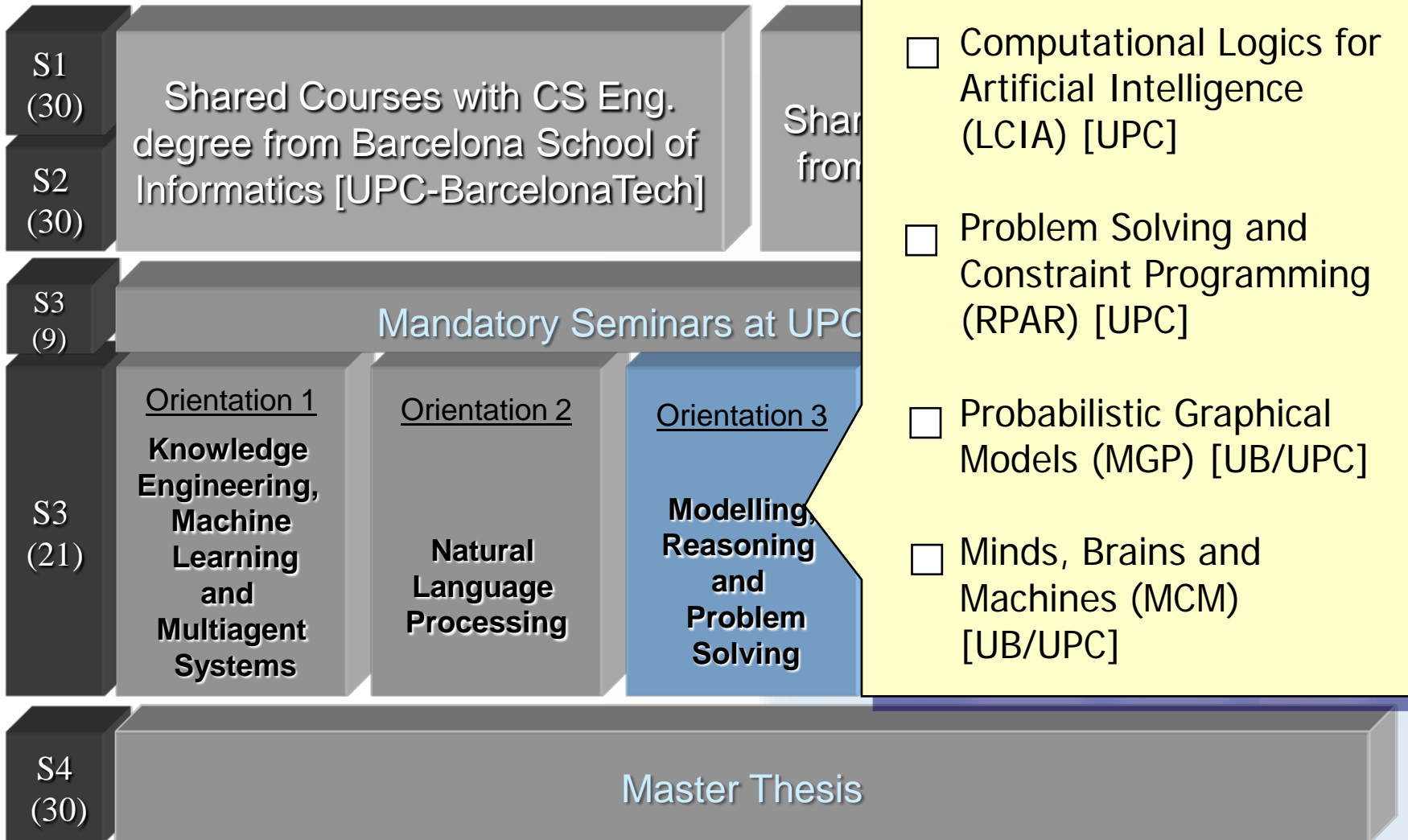□ *Machine Learning in Neuroscience* (One-week in May or June)

Orientations

| S1 (30) | Shared Courses with CS Eng. degree from Barcelona School of Informatics [UPC-BarcelonaTech] |
| S2 (30) | |

| S3 (9) | Mandatory Semina |

| S3 (21) | Orientation 1 **Knowledge Engineering, Machine Learning and Multiagent Systems** | Orientation 2 | Ori |

| S4 (30) | Master Thesis |
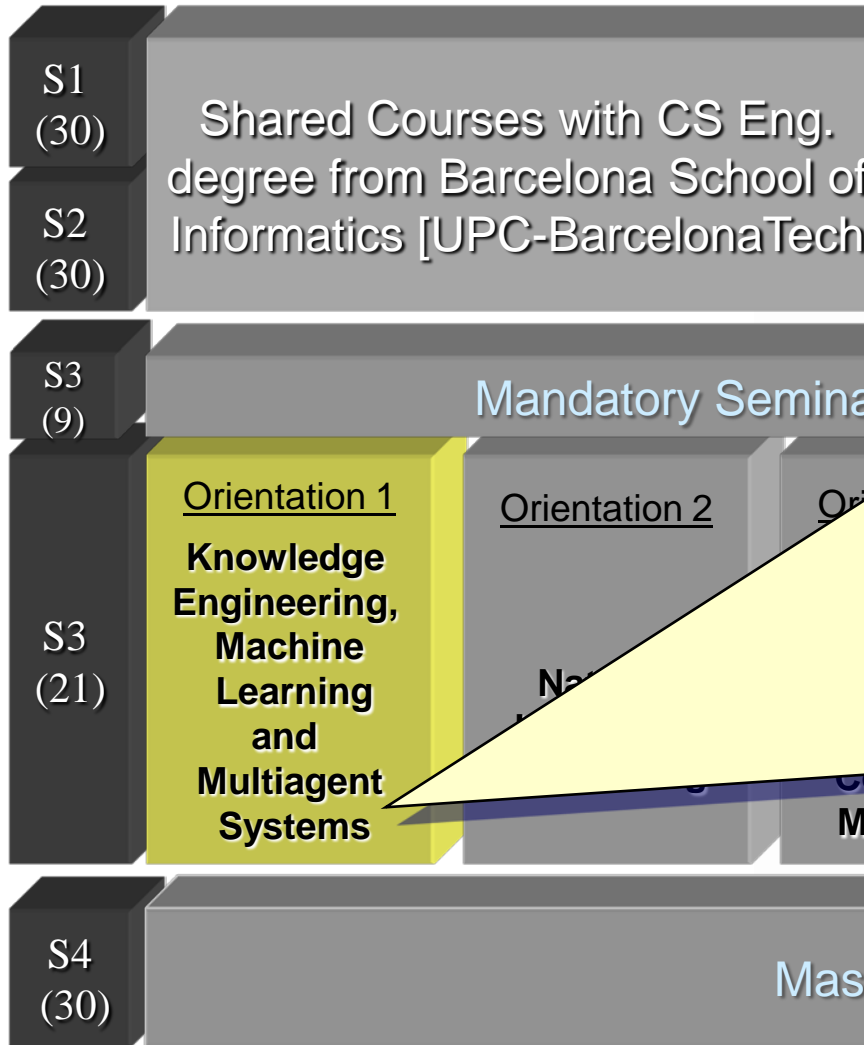
☐ Machine Learning in Agents and Multi-Agent Systems (AASM) [UPC]

☐ Multicriteria Decision Aid System (SAD) [URV]

☐ Intelligent Decision Support Systems (SISPD) [UPC]

☐ Multiagent Systems (SMA) [UPC]

☐ Introduction to Multiagent Systems (ISMA) [URV]

☐ Advanced Techniques in Machine Learning (TAVA) [UPC]

☐ Self-Organizing Agent Systems (SAA) [UB]

Orientations

Master in AI

S1 (30)	Shared Courses with CS Eng. degree from Barcelona School of Informatics [UPC-BarcelonaTech]
S2 (30)	

S3 (9) — Mandatory Seminars

S3 (21)

Orientation 1	Orientation 2			
Knowledge Engineering, Machine Learning and Multiagent Systems	**Natural Language Processing**	**and Problem Solving**	**Computing**	**and Distributed Systems**

- [ ] Natural Language Processing for Massive Textual Data Management (PLN-PMT) [UPC]

- [ ] Natural Language Processing for Human-Machine Communication (PLN-CPM) [UPC]

S4 (30) — Master Thesis

Orientations

S1 (30)	Shared Courses with CS Eng. degree from Barcelona School of Informatics [UPC-BarcelonaTech]
S2 (30)	

S3 (9)	Mandatory Seminars at UPC

	Orientation 1	Orientation 2	Orientation 3
S3 (21)	**Knowledge Engineering, Machine Learning and Multiagent Systems**	**Natural Language Processing**	**Modelling, Reasoning and Problem Solving**

☐ Computational Logics for Artificial Intelligence (LCIA) [UPC]

☐ Problem Solving and Constraint Programming (RPAR) [UPC]

☐ Probabilistic Graphical Models (MGP) [UB/UPC]

☐ Minds, Brains and Machines (MCM) [UB/UPC]

S4 (30)	Master Thesis

Orientations

Neural and Evolutionary Computation (CNE) [UPC]

Knowledge Management and Data Mining (GCO) [URV]

Data Mining II (MD2) [UPC]

Neural Networks in Finance and Investing (XNF) [UB/UPC]

Soft Computing (SC) [URV]

Shared Courses with CS Eng. degree from Engineering School [URV]

s at UPC, URV, UB (9)

Orientation 4

Orientation 5

3

Soft Computing

Vision, Robotics and Distributed Systems
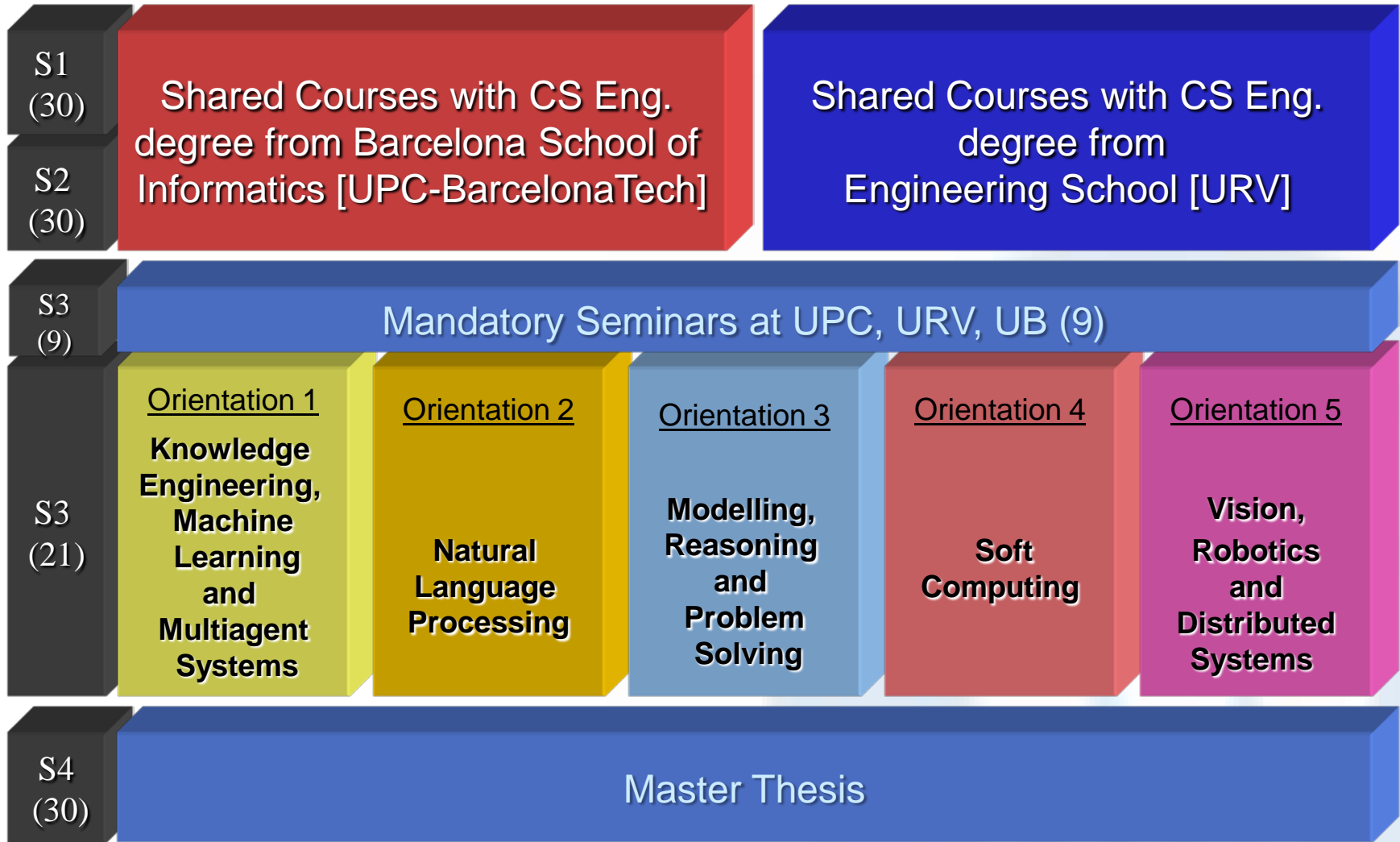
Multiagent Systems

Processing

Problem Solving

S4 (30)

Master Thesis

Master in AI

Orientations

S1 (30)	Shared Courses with CS Eng.
S2 (30)	Shared Courses with CS Eng.
S3 (9)	
S3 (21)	
S4 (30)	Master Thesis

Orientation 5

Vision, Robotics and Distributed Systems

☐ Cooperative Robotics (RC) [URV]

☐ Industrial Robotics (RI) [URV]

☐ Simulation and Data Visualization (S) [URV]

☐ Distributed Systems (SD) [URV]

☐ Artificial Vision (VA) [URV]

☐ Perceptual Learning (AP) [UB]

☐ Human and Object Recognition (RHO) [UB]

Structure

S1 (30)	Shared Courses with CS Eng. degree from Barcelona School of Informatics [UPC-BarcelonaTech]
S2 (30)	Shared Courses with CS Eng. degree from Engineering School [URV]

S3 (9) — Mandatory Seminars at UPC, URV, UB (9)

S3 (21)

Orientation 1
Knowledge Engineering, Machine Learning and Multiagent Systems

Orientation 2
Natural Language Processing

Orientation 3
Modelling, Reasoning and Problem Solving

Orientation 4
Soft Computing

Orientation 5
Vision, Robotics and Distributed Systems

S4 (30) — Master Thesis

Admission

- **Admission process** is a **one-time procedure** that students must do **only at the beginning to get admission to the Master Programme**

- There are **3 admission periods. Two** for entering to the MAI in **Fall term** and one for entering to the MAI in **Spring term** (see *the calendar*)
  - *Fall term*: one ordinary and one extraordinary
  - *Spring term*: one ordinary

- In **the desired period**, students must fill in an *admission request* through general UPC Postgraduate admission request Web page: https://officialmastersdegrees.upc.edu/preregistration/

- Once a **student request** has been admitted:
  1. **The admission document** determines **the number of ECTS credits that must be coursed** in order to finalize the Master, thus indicating **the *expected* ECTS that could be recognized** for previous studies. If considered necessary, the CAIMIA **might indicate requirements for complementary education.**
  2. **The CAIMIA** assigns a **tutor** to each student.
  3. **Students accept or reject** the admission conditions.
  4. **Tutors** design **an adequate itinerary for each of their tutored students** via interview or e-mail.

Registration

- **Previous** to the registration

  - **Students must contact** their respective tutors.

  - **Tutors** will be responsible for advising the student about the master courses they must take, including those already decided by the CAIMIA

  - **Tutors** may propose modifications in the list of complementary courses, previously agreed with the CAIMIA.

- **Process** for the registration

  1. **Students** hand in the *tutor enrolment/registration authorization document* specifying the courses taken per semester, **signed by their tutor**, **at the LSI Dept**., before the deadline (*see the calendar*).

  2. **The FIB Adm. Dept. fixes the date and hour where the registration will take place (at the FIB Secretariat)**, and determines the deadlines for registration modifications or cancellations.

  3. **For the first registration**, be sure to have with you the required documentation, original (and legalized/translated if required) and copies.

- This process must be done **every semester**.

- Registration **cancellation/modification** is only possible in determined conditions and brief period of time after registration

ECTS Credit Recognition

- An **student** of the MAI **can requests** the recognition of some courses into the corresponding/similar courses of the MAI, **up to the maximum amount of ECTS specified by the CAIMIA** at the admission.

- Maximum of **60 ECTS** can be requested

- These subjects must have been coursed and passed with by herself / himself in a **different official postgraduate degree** or in a **different official 2nd cycle engineering degree (with a minimum of 240 ECTS)"**.

- **No ECTS credit recognition can be done from a graduate degree,** with some very well motivated exception, **or older 1st cycle engineering degree**

- The student must attach to this application the **legally required documentation to prove** the above statements.

Process for ECTS credit recognition

1. **The student** has to request ECTS credit recognition **to the FIB Secretariat**, where he/she will present the *credit recognition request document* and know the dates and the fee to pay in order to launch the process. The student should also present:

   - The **official academic certificate** (stamped copy of their marks sheet by the original University/Education Centre).
   - The **syllabus of the courses** he/she pretends to validate (stamped copy of the course syllabus by the original University/Education Centre).

2. **The CAIMIA will study and solve the request**, sending a notification to the student and a copy to the FIB Secretariat.

3. **The student** will have to complete the **registration at the FIB Secretariat**, **paying a tax and the 25% of the ECTS price for each validated credit** (see the credit official fees).

Master Thesis Regulation

- The Master's Thesis is an academic exercise, where the student will use the acquired knowledge in previous formation courses of the MAI to **solve a research** or a **professional problem** in the field of Artificial Intelligence.

- The Thesis could be **a research work**, or a **technological project**.

- The Thesis **must be supervised** by one or more **advisors**

- The **Advisors** must be Doctors who are teaching in the MAI or who are assigned to the MAI research lines, or other Doctors or MSc. Postgraduated people. In the last two cases, it is needed a MAI professor acting on behalf of the Advisor ("**Ponent**").

- Both kind of Master's Thesis could be done in an **university environment** or in a **company environment**.

- Master Thesis developed in a **company** should be planned within the framework of an **Educative Cooperation Agreement** ("Conveni de Cooperació Educativa") between the University and the company for each student.

Master Thesis Admin. Procedure

1. **Proposal of the Master Thesis theme**. The Master Thesis theme must be proposed and accepted by the CAIMIA. It must be electronically sent (**1 proposal per file, in one pdf file**) to the **LSI Dept. Secretariat (merce@lsi.upc.edu)** according to the <u>calendar</u>.

2. **The inscription of the Master Thesis**. It is a reservation of the Thesis theme for a determined student. The student has to deliver it to the **LSI Dept. Secretariat** according to the <u>calendar</u>.

3. **Master Thesis registration**. This step must be done near the beginning of the term when the student plans to finish the Master Thesis work. The student must go the **FIB Secretariat** according to the <u>calendar</u> to complete the Thesis registration.

4. **Documentation presentation**. When the student has finished the Thesis work, he/she must present **both** the corresponding **MSc.Th. Advisor presentation authorization form signed by the Advisor/s** jointly with the **Master Thesis document**. The Master Thesis document (**four bound copies and an electronic version copy (CD)**) must follow the usual scheme of a scientific/technological work. It is mandatory that the document includes the specific **Master's Thesis cover template** required for a Thesis document. All must be delivered at **LSI Dept. Secretariat** according to the <u>calendar</u>

- **All Master Theses are written and defended in English.**

- The composition of the MSc.Th Evaluation Committee **for the academic course 2010/2011** is the following:

    - President: Dr. René Alquézar (UPC)
    - Secretary: Dr. Sergio Escalera (UB)
    - Vocal: Dr. David Riaño (URV)

- The composition of the MSc.Th Evaluation Committee **for the academic course 2011/2012** will be the following:

    - President:
    - Secretary:
    - Vocal:
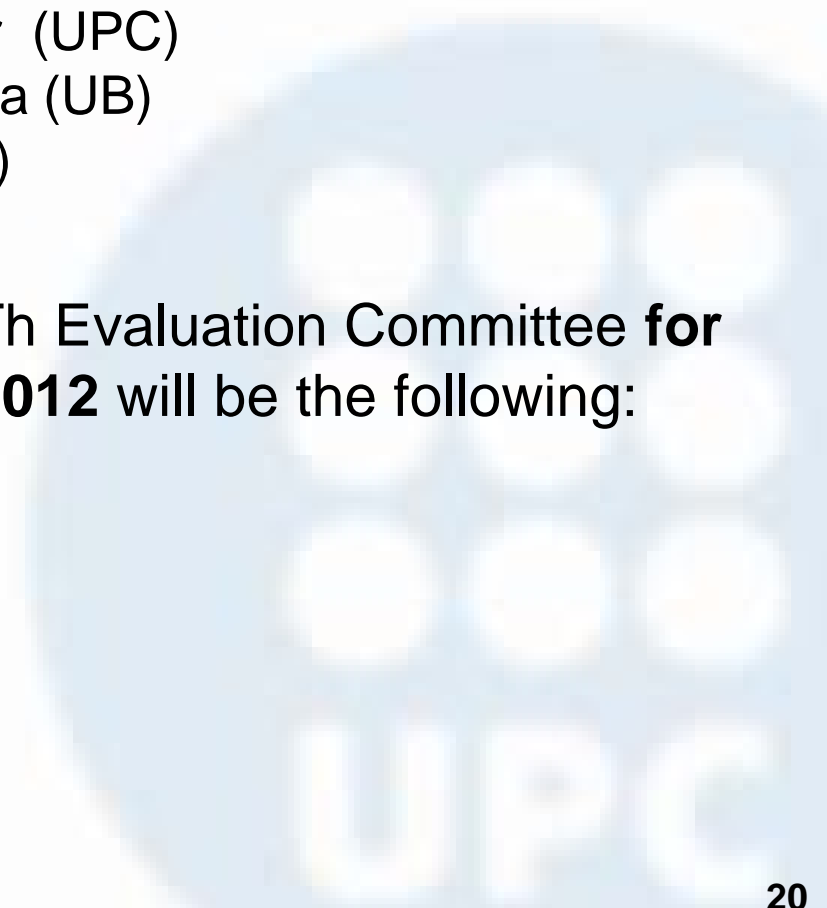
Regulations (1)

- UPC General Master's Academic Normative (<u>NAMU</u>) for the corresponding academic year

- UPC-URV-UB Collaboration Agreement for the MAI

- Permanence normative

  - During his/her first academic year (the first two terms), the student should obtain a **minimum of 15 ECTS**.

  - There are two Master's enrollment conditions:

    - <u>Full-time students </u>(the usual case): for students in a full-time basis. They could register each semester whatever number of ECTS they want during a maximum number of semesters. This maximum number depends on the number of ECTS they must obtain

    - <u>Part-time students</u>: for students working part-time in a company. They could register a minimum of 15 ECTS per semester, during a maximum number of semesters. This maximum number depends on the number of ECTS they must obtain.

Master in AI

Regulations (2)

- The **maximum time allowed for the completion** of **courses** and for the **completion of the Master Thesis** depends on the Master's enrollment condition (full-time student or part-time student) and on the number of ECTS they must obtain as described in the following tables:

FULL-TIME

ECTS	Time to complete courses	Time to complete Master Thesis
60	3rd term	4th term
61-90	4th term	5th term
91-120	5th term	6th term

PART-TIME

ECTS	Time to complete courses	Time to complete Master Thesis
60	5th term	6th term
61-90	6th term	7th term
91-120	7th term	8th term

Tutor's tasks

- The **CAIMIA assigns a tutor to each student** when they are admitted
- **Tutors** must **accept each proposed tutored student** through the Admission UPC web page.
- In general, **Tutors** task is to **advise and give support** to students
- **IMPORTANT**: a **tutor** is **NOT necessarily the advisor of a student**

PREVIOUS TO REGISTRATION

- **Students** must **contact** their respective tutors.
- Tutors **will be responsible for advising the student** about the master courses they must take, including those already decided by the CAIMIA.
- Tutors **may propose modifications** in the list of complementary courses, previously agreed with the CAIMIA.
- Tutors **design an adequate itinerary** for each of their tutored students via interview or e-mail.

REGISTRATION

- **Each term**, tutors **must authorize the course registration** of their tutored students

ECTS CREDIT RECOGNITION

- Tutors must **help their tutored students to fill in** the ECTS credit recognition form

Dual Master Degrees

- UPC participates in the **Dual Master's Degree programme** within the framework of the CLUSTER network

- In **CLUSTER dual degree studies**, the student **completes part (first year)** of the Master's programme studies **in the home university** and **the other part (second year) in the partner university**.

- The **Master Thesis** is supervised by **both universities** and the student graduates from both universities.

- MAI currently has **two dual degree partner universities**:

  - Master's Programme in Information Systems and Computer Engineering (MEIC), Technical University of Lisbon, School of Engineering (IST) in Portugal.
  - Master's Programme in Machine Learning and Data Mining (MACADAMIA), Aalto University of Science and Technology (formerly, Technical University of Helsinki, TKK) in Finland.

Calendar

LECTURING PERIOD AT FALL SEMESTER 2011/2012*

*Eventually some course could start and/or finish out of the following periods

UPC and UB

- **S1 and S2 courses:** from September 7th 2011 to December 23rd 2011
  S3 courses: from October 3th 2011 to January 13th 2012

URV

- **All courses:** from September 5th to December 16th 2011

LECTURING PERIOD AT SPRING SEMESTER 2011/2012*

*Eventually some course could start and/or finish out of the following periods

UPC and UB

- **S1 and S2 courses:** from February 13th to June 1st 2012
  S3 courses: from March 5th to June 8th 2012

URV

- **All courses:** from February 6th to May 25th 2012

- **See all deadlines at Calendar section at**
  https://postgrau.upc.edu/ai/gimaster/calendar

Forms

- Tutor Enrolment Authorization (word, pdf, openoffice)

- ECTS Credit Recognition Application (word, pdf, openoffice)

- Master's Thesis Proposal (word, pdf, openoffice)
  - **Each** M.Sc. Th. Proposal should be in **a separate file, named as follows:**
    - "MSc-Th-Proposal-2-or-3-title-first-words-Advisor/s-AcademicYear.pdf"
    - For example: "MSc-Th-Proposal-Syntactic-and-Semantic-LluisMarquez&JesusGimenez-1011.pdf"
  - The proposal could be elaborated with any text processor (Word, Openoffice, etc.), but the **file delivered to LSI Dept. Secretary MUST BE a single PDF file**

- Master's Thesis Inscription (word, pdf, openoffice)

- Master's Thesis Advisor Presentation Authorization (word, pdf, openoffice)

- Master's Thesis Cover Template (word, pdf, openoffice)

- Master's Thesis UPC-Library Dissemination Agreement

Master in AI

Fees, Grants & Accommodation (1)

Fees

- The **official price** for academic course 2011/2012 is **31,42 €per credit ECTS** (see <u>updated information on Fees at the MAI web</u>)

Grants and Scholarships

- There are different options to get funds for your studies. You could find updated information on **different calls** for asking **grants** and **financial aids** for study and mobility that are offered by the Universities and other institutions.
  - At UPC, <u>here </u>you will find the related information
  - At URV, <u>here</u> you will find the related information
  - At UB, <u>here</u> you will find the related information

Assistance

- If you need some **assistance** or help for:
  - Scholarships
  - Visa obtaining
  - Legalization of documents
  - Diplomatic affairs
  - Accommodation
  - Language courses
  - Health insurance

Assistance (cont.)

- You can contact the International Mobility/Students Office at each University:

  - At UPC:

    Oficina de Mobilitat Internacional d'Estudiants de Barcelona (OMI)
    Campus Nord, Building A4, underground level
    C. Jordi Girona, 1-3
    08034 Barcelona
    Phone: (+ 34) 93 401 69 37 / Fax: (+ 34) 93 401 74 02
    E-mail: oficina.mobilitat.internacional@upc.edu
    Timetable: From Monday to Friday, from 10 am to 2 pm. Tuesday and Thursday, from 4 pm to 6 pm too
    Closed in August.

    Map

  - At URV:

    International Centre (I-Centre)
    E-mail: postgraduate@urv.cat

  - At UB:

    Student Support Service (SAE)
    Ph.: (+34) 93 403 54 17 / (+34) 93 403 44 00
    Fax: (+34) 93 403 59 17
    Student enquiries mailbox
    Timetable: From Monday to Friday, from 9 am to 2 pm
    Map
    UB International scope

Accommodation

- There is the possibility of living at a Student Residence Halls or in flats.

- Take a look at RESA company, which is in charge of the management of several Accommodation Services for University people:

  - If you are staying at Barcelona, search for "Torre Girona" Residence among others (Lesseps, Pere Felip Monlau, etc.). Torre Girona is the Residence inside the UPC Campus Nord.
    Also, accommodation in flats could be provided.

  - If you are staying at Tarragona, search for "Residència Sant Jordi", which is managed also by RESA.

- UB offers several Student Residence Halls in Barcelona

Collaboration with Industry

Research Groups - MAI

KEMLG · UPC
Knowledge Engineering and Machine Learning Group
UNIVERSITAT POLITÈCNICA DE CATALUNYA

TALP

S'OCO

WAI

iTAKA
Tecnologies Intel·ligents
Avançades per la
Gestió del Coneixement

BANZAI 萬歲!

ROVIRA I VIRGILI UNIVERSITY
Intelligent Robotics and Computer Vision Group

ALEPH-URV: Algorithms Embedded in Physical Systems

SSAI-URV: Sensory Systems Applied to Industry

Industry

- **3scale Networks S.L.**
- **SISLtech S.L.**
- **TMT Telecom Factory**
- **Bdigital**
- **Techideas**
- **Qporama**
- **ASCAMM**
- **iSOCO**
- **Servei Català de la Salut**
- **Agencia Catalana de l'Aigua**
- **Ajuntament de Barcelona**
- **Institut Guttmann**
- **Organització Mundial de la Salut**
- **Telefónica I+D**
- **IBM Labs. UK.**
- **Fujitsu Gmbh**
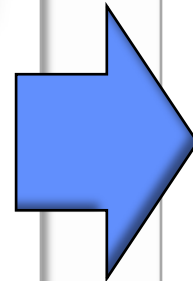
All information about MAI in the Web

https://postgrau.upc.edu/ai

Thank you !!

Any question ???