

Masters of Science in Informatics at Grenoble

Plan

- Objective and approach
- Overview of program
- Action Plan
- Provisions for Sept 2008
- Academic program and teaching teams

Objective and Approach

Objectives:

- 1) Establish Grenoble as a World Class center for Graduate Education in Informatics
- 2) Draw best students from around the world into our doctoral programs
- 3) Offer international education to ENSIMAG and UJF students.

Approach:

- 1) Use local internationally prominent research groups to attract students
- 2) Build on existing academic programs (ENSIMAG, UFRIMA)
- 3) Offer courseware in English
- 4) Encourage teaching by INRIA and CNRS researchers at M1 and M2
- 5) Offer academic Exchanges with partner institutions

Academic Domains

1. Parallel, Distributed and Embedded Systems
2. Mobile and Interactive Systems
3. Graphics, Vision and Robotics.
4. Security and Cryptology of Information Systems

Academic Program

M1 Semester 1: 30 ECTS. Core Courses: choose 24 from 36 ECTS .

(e.g. Operating Systems, Math, Software Engineering, Programming, Data Bases, Image and Signal Processing, French or English)

M1 Semester 2: 30 ECTS. Core Courses: choose 24 from 48 ECTS .

(e.g. Algorithms, Software Engineering, Networks, Intelligent Systems, Graphics, Robotics and Vision, Cryptography, Distributed Algorithms)

M2 Semester 3: Specialisation. 30 ECTS.

Parallel, Distributed and Embedded Systems, Mobile and Interactive Computing, Graphics-Vision-Robotics, Security and Crypto

M2 Semester 4: Project (Research or Professional)

Admissions: Origin of Students

48 to 96 Students drawn from Five students groups:

- 1) Non-Local and Foreign Students
 - 2 year Masters program (M1 and M2.).
 - Registration and diploma UJF and/or INPG
- 2) ENSIMAG Dual-Diploma and Cluster Exchange Students
 - Registration at partner institution
 - Minimum 2 semesters for Dual masters
- 3) Ensimag students
 - 1 or 2 semester at a Partner Institution (2 semesters for Dual Engineer Degree).
 - INPG-ENSIMAG: Inscription and diploma
- 4) UFR-IMAG Masters Students
 - UJF: Inscription and diploma, exchange semester optional
- 5) Polytech Masters Students
 - UJF: Inscription and diploma, exchange semester optional

International Partners

- 1) INPG CLUSTER partners: Univ. Karlsruhe, UPC Barcelona, KTH, TKK, IST, Politecnico-Torino, UCL, EPFL, U. Darmstadt, ICL, ..
- 2) Tsinghua University, Beijing, China (Pekin), HK-UST, HKB (Hong Kong)
- 3) The Singapore Universities: NUS and NTU
- 4) UFRGS, Porto Alegre (Brazil)
- 5) KAIST (Korea)
- 6) LAFMI partners, ITESM (Monterrey), Mexico
- 7) CMU, U-Penn, Stanford, MIT, Univ. of Illinois, Georgia Tech, UCLA, USC, Berkeley.
- 8) IIT Delhi, Kampur, Bangalore, Bombay (India)
- 9) European Project partners (Marie Curie Networks, NoEs, IPs).

Action Plan - Progress report

July 2007	Define contours for the initial academic program ✓
October 2007	Define the M1 and M2 curriculum ✓ Discuss Dual Diplomas with partners ✓ Define contents for publicity and web site ✓
February 2008	Define Admission procedures for M1 and for M2 ✓ Obtain academic and administrative resources ✓
March-April 2008	Distribute publicity, prepare applications information ✓
May 2008	Finalize teaching teams, courseware for 2008-2009 ✓
31 May 08	Applications from External and Exchange students
31 June 2008	Applications from ENSIMAG and UFRImag students,
July 2008	Regular admissions for M1 and M2
Sept 2008	Open pilot year (M1 and M2), dominance exchange and local students Open negotiations for Dual Masters Diplomas with partners institutions
Sept. 2009	Open full program

Preparation for Sept 2008

Site web Publicité : <http://mosig.imag.fr>

Site web Admin: Intranet ENSIMAG

Academic Resources: 1/3 UJF, 1/3 INPG, 1/3 CNRS-INRIA

Other Resources: Dossiers BQI submitted to INPG and to UJF

Scolarité

ENSIMAG - full time poste attributed - half for MoSIG

UJF: half post ITA requested.

M1 MoSIG - Inscriptions, Service de Scolarité UFRIMAG

M2 MoSIG - Inscriptions, Service de Scolarité ENSIMAG

Estimations pour Sept 2008

	Exterieurs	UJF	ENSIMAG	INPG Cluster	Total
M1 Semester 1	5	5	5	5	20
M1 Semester 2	5	5	5	15	30
M2 PEDS	4	5	5	5	19
M2 MIS	2	4	4	4	14
M2 GVR	8	4	4	5	21
M2 SCIS	15	4	5	5	29

Acronymes:

- PEDS: Parallel, Distributed and Embedded Systems
MIS: Mobile and Interactive Systems
GVR: Graphics, Vision, Robotics
SCIS: Security and Cryptology of Informatics Systems

Projet de Calender - Semestre 1

No	Du	au	L	M	M	J	V	
37	8-Sep-08	12-Sep-08			1	1	1	
38	15-Sep-08	19-Sep-08	1	1	1	1	1	
39	22-Sep-08	26-Sep-08	1	1	1	1	1	
40	29-Sep-08	3-Oct-08	1	1	1	1	1	
41	6-Oct-08	10-Oct-08	1	1	1	1	1	
42	13-Oct-08	17-Oct-08	1	1	1	1	1	
43	20-Oct-08	24-Oct-08	1	1	1	1	1	
44	27-Oct-08	31-Oct-08	V	V	V	V	V	Vacation Toussaint
45	3-Nov-08	7-Nov-08	1	1	1	1	1	
46	10-Nov-08	14-Nov-08	1	V	1	1	1	
47	17-Nov-08	21-Nov-08	1	1	1	1	1	
48	24-Nov-08	28-Nov-08	1	1	1	1	1	
49	1-Dec-08	5-Dec-08	1	1	1	1	1	
50	8-Dec-08	12-Dec-08	1	1	1	1	1	
51	15-Dec-08	19-Dec-08	E	E	E	E	E	Exams
52	22-Dec-08	26-Dec-08	V	V	V	V	V	Vacances Noel
1	29-Dec-08	2-Jan-09	V	V	V	V	V	Vacances Noel
2	5-Jan-09	9-Jan-09	P	P	P	P	P	Projet
3	12-Jan-09	16-Jan-09	P	P	P	P	P	Projet
4	19-Jan-09	23-Jan-09	P	P	P	P	P	Projet
5	26-Jan-09	30-Jan-09	P	P	P	P	1	Projet
Total 1er Semestre			12	11	12	12	12	

Projet de Calender - Semestre 2

6	2-Feb-09	6-Feb-09	1	1	1	1	1	
7	9-Feb-09	13-Feb-09	1	1	X	1	1	J Ent. ENSI
8	16-Feb-09	20-Feb-09	V	V	V	V	V	Vacances Hiver
9	23-Feb-09	27-Feb-09	1	1	1	1	1	
10	2-Mar-09	6-Mar-09	1	JSKI	1	1	1	ENSIMAG
11	9-Mar-09	13-Mar-09	1	1	1	1	1	
12	16-Mar-09	20-Mar-09	1	1	1	1	1	
13	23-Mar-09	27-Mar-09	1	1	1	1	1	
14	30-Mar-09	3-Apr-09	V	1	1	1	1	
15	6-Apr-09	10-Apr-09	1	1	1	1	1	
16	13-Apr-09	17-Apr-09	V	V	V	V	V	Vacances Printemps
17	20-Apr-09	24-Apr-09	1	1	1	1	1	
18	27-Apr-09	1-May-09	1	1	1	?	V	Fete du travail
19	4-May-09	8-May-09	1	1	1	1	V	anniversaire 1945
20	11-May-09	15-May-09	1	1	1	1	1	
21	18-May-09	22-May-09	E	E	E	X	E	
22	25-May-09	29-May-09	P	P	P	P	P	
23	1-Jun-09	5-Jun-09	P	P	P	P	P	
24	8-Jun-09	12-Jun-09	P	P	P	P	P	
25	15-Jun-09	19-Jun-09	P	P	P	P	P	
Total 1er Semestre			12	12	12	12	12	

Master 1 Semester 1 - Core Semester - 30 ECTS

3 ECTS = 3 h per week for 12 weeks, composed of courses and labs

21 ECTS commun	ECTS	Proposed Instructor
Principles of Operating Systems	6	JF Mehaut, V. Marangozova-Martin
Mathematics for Computer Science	3	Denis Trystram
Software Engineering	3	Philippe Lalanda
Object Oriented Modelling	3	Philippe Morat
Programming Languages and Compiler Design	6	Yassine Lakhnech
Algorithms and Program Design	3	Frederic Devernay
Languages (one or both)		
English for non-native Speakers	3	Pool de langues
French for non-native speakers	3	Alliance Francaises
Programming Project (Choose 1)		
Programming Project (Operating System-UJF Only)	3	Sara Bouchenak, J-F Mehaut
Programming Project (Compiler Design - UFRIMAG)	3	Pablo Arrighi
Programming Project (Compiler Design - ENSIMAG)	3	As with all ENSIMAG 2

Master 1 Semester 1 - Core Semester - 30 ECTS

3 ECTS = 3 h per week for 12 weeks, composed of courses and labs

21 ECTS commun	ECTS	Volume
Principles of Operating Systems	6	30 h C + 30 h TD
Mathematics for Computer Science	3	36 h CTD
Software Engineering	3	18 h C + 18h TD
Object Oriented Modelling	3	18 h C + 18h TD
Programming Languages et Compiler Design	6	30 h C + 30 h TD
Algorithms and Program Design	3	36 h CTD
Languages (one or both)		
English for non-native Speakers	3	36 h CTD
French for non-native speakers	3	36 h CTD
Programming Project (Choose 1)		
Programming Project (Operating System-UJF Only)	3	3 semaines en janvier
Programming Project (Compiler Design - UFRIMAG)	3	3 semaines en janvier
Programming Project (Compiler Design - ENSIMAG)	3	4 semaines en janvier

Master 1 Semester 2 Elective Semester

Choose 24 ECTS from Technical Classes plus Project and Technical writing and speaking

Master 1 Semester 2	ECTS	Teaching Teams
Data Base Foundations	3	Claudia Roncancio
Introduction to Human Computer Interaction	3	F. Bérard, G. Calvary, J. Coutaz, L. Nigay
Software Engineering and Adaptable Systems	6	D. Donsez, S Bouchenak, P. Lalande, ?
Computer Networks Principles	3	Andrzej Duda
Introduction to Intelligent Systems E	3	James Crowley
Introduction to Computer Graphics	3	MP Cani, S. Hahmann
Introduction to Robotics and Computer Vision	3	C. Laugier, O. Aycard, E. Boyer, E. Arnaud
Image and Signal Processing	3	Céline Fouard
Introduction to Cryptology and Coding	3	JL Roch, JG Dumas, L. Fousse, P.Elbaz
Introduction to Distributed Systems	3	V. Quéma, Ph. Bidinger, S. Bouchenak
Group Programming Project: Distributed Game	3	Laurence Nigay, Joelle Coutaz, Clement Pernet?
Technical writing and speaking (English or French)	3	Pool de Langues

Master 1 Semester 2 Elective Semester

Choose 24 ECTS from Technical Classes plus Project and Technical writing and speaking

Master 1 Semester 2	ECTS	Volume
Data Base Foundations	3	36 h CTD (Cours ENSIMAG)
Image and Signal Processing	3	36 h CTD
Introduction to Human Computer Interaction	3	36 h CTD (Cours ENSIMAG)
Software Engineering and Adaptable Systems	6	60 h CTD (Cours ENSIMAG)
Computer Networks Principles	3	36 h CTD (Cours ENSIMAG)
Introduction to Intelligent Systems	3	36 h CTD (Cours ENSIMAG)
Introduction to Computer Graphics	3	36 h CTD (Cours ENSIMAG)
Introduction to Robotics and Computer Vision	3	36 h CTD (Cours ENSIMAG)
Introduction to Cryptology and Coding	3	36 h CTD (Cours ENSIMAG)
Introduction to Distributed Systems	3	36 h CTD ?
Integration Project: Distributed Game	6	4 week project in June
Technical writing and speaking (English or French)	3	36 h CTD ?

Master 2 Semester 1
Parallel, Distributed and Embedded Systems

Embedded and Distributed Systems	ECTS	Teach teams
Advanced Aspects of Operating Systems	6	Olivier Gruber, Renaud Lachaize
Wireless Networking and Sensor Networks	6	Claude Casteluccia
Distributed Systems	6	Olivier Gruber, Sara Bouchenak
Embedded Systems	6	Florence Maraninchi, Yassine Lakhnech
Parallel Systems	6	Jean-Louis Roch, Arnaud Legrand
Component Programming	6	J-B Stefani et P. Quema

Master 2 Semester 1

Mobile and Interactive Computing

Mobile and Pervasive Computing	ECTS	Teaching Teams
Pervasive and ad-hoc Services	6	D. Donsez, V. Lestideau, J. Estublie, Ph. Lalanda
Wireless Networking and Sensor Networks	6	C. Casteluccia
Distributed Systems	6	Olivier Gruber, Sara Bouchenak
Mobile and Context-aware Interactive Systems	6	G. Calvary, J. Coutaz, L. Nigay, J. Crowley
Advanced Interaction	6	F. Bérard, R. Blanch, L. Nigay

Master 2 Semester 1

Graphics, Vision and Robotics

Graphics, Vision, Robotics,	ECTS	Teaching Teams
Computer Vision	6	J.L. Crowley, E. Boyer, C. Schmid
Computer Graphics II	6	M. P. Cani, F. Hetroy, J. Thollot
Autonomous Robotics	6	C. Laugier, J. Crowley, P. Bessiere
Machine Learning	3	C. Schmid, B. Triggs
Virtual and Augmented Reality	3	S. Coquillart

Master 2 Semester 1

Security and Cryptology of Information Systems

Course title	ECTS Credits
<i>Non-elective Core Courses</i>	
Security models: proofs, protocols and politics	6
Symmetric and asymmetric cryptology – PKI	6
System administration and network security	3
English / French / Scientific presentation	3
<i>Choose one of the two following elective 12 ECTS</i>	
Elective A. Security of systems and infrastructures	12
Elective B. Cryptology, coding and multimedia applications	12
<i>Choose one of the two following elective 3 ECTS</i>	
Elective 1. Smart card security, certification and norms	3
Elective 2. Quantum cryptography, biometrics, pairings	3

Master 2 Semester 1

Security and Cryptology of Information Systems

Non-elective Core Courses	ECTS	Teaching teams
Security models: proofs, protocols and politics	6	Roch,, Lafourcade, Autreau
Symmetric and asymmetric cryptology – PKI	6	Dumas, Elbaz-Vincent, Fousse
System administration and network security	3	Denneulin, Wagner, Marchand
English or French	3	Pool Langues
Elective A. Security of systems and infrastructures		
Advanced security of system and networks	3	Wagner, Castellucia
Hardware and embedded secure architectures	3	Leveugle
Distributed algorithms and fault-tolerance	3	Quéma, Anghel
Deployment of a secure grid infrastructure	3	Denneulin, Wagner
Elective B. Cryptology, coding and multimedia appl.		
Advanced cryptology: elliptic curves and cryptanalysis	6	Elbaz-Vincent, Leprévost, Gillard
Multimedia applications and watermarking	3	Cayre, Ebrahimi, Bas
Error correcting codes and fault-tolerance	3	Roch, Patchichkine, Brossier
Elective 1. Smart card security, certification and norms	3	Autreau, Canovas, Potet
Elective 2. Quantum cryptography, biometrics, pairings	3	Arrighi, Elbaz-Vincent