

regards croisés



newsletter number 5 - April 2006

École Centrale Paris



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EM Lyon and Ecole Centrale Paris launch a new *Mastère Spécialisé** for engineers and business developers

In Co-accreditation with EM Lyon (Ecole de Management de Lyon), the *Mastère Spécialisé "Strategy and Development of International Businesses (SDAI)"* will welcome its first students in September 2006.

This MS proposes an original approach in its pedagogy focused on business development, a pedagogy which brings together expertises of two main schools of engineering and management, and especially in its outlets in line with new expectations towards strong technological added value companies.

** Mastère Spécialisé is a specialised, postgraduate training programme.*

*** UPS: Maths and Physics professors' federation of "classes préparatoires".*

Read more in "FOCUS"

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EM Lyon and ECP launch a new *Mastère Spécialisé "Strategy and International Business Development"*



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Towards the ecological paradise?

This project (1) is financed by the French National Agency of Research within the framework of the Call Enquiring for Young Research Workers: the first goal is to evaluate the efficiency of the existing policy tools thanks to new theories in economics but, also, to provide recommendations as regards policies of innovation and environment. The second goal is to test the validity of these new approaches which relate in particular to the adaptation of the stock of capital of contemporary economies to the scarcity of the natural resources and to the constraints related to the environmental policies. Thus the project (3 years duration: 2005-2008) is composed by theoretical and empirical studies which are closely dependent. More precisely, the theoretical part consists in carrying out a model of growth based on competition between various types of endogenous technical change in the energy sector (fossil energies and non-polluting energies). The empirical part allows us (from simulations and econometric estimations) to test the reactivity of firms in the renewal of the equipment and the relations of complementarity between the types of R&D. These studies will make it possible to try out different scenarii concerning the economic policies for environment (R&D subsidies, permanent or transitory shocks on the prices of energy...) and to study their effects on Social Wellbeing.

The economists who constitute the team come from laboratories of the Universities of Cergy, Strasbourg, Leuven, Toulouse and the Ecole Centrale Paris (**laboratory ERASME**) (2).

(1) "Economic Growth and Demand for Energy in the presence of Endogenous Technical Progress" (CEDEPTE in French) n° ANR-05-jcjc-034-01.

(2) ERASME in French for "Team of Research in Analysis of the Systems and Economic Modeling", laboratory of Economics of the ECP; Pascal da Costa is the young researcher financed for this program.

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Earthquake in the city

Does a strong urban density modify the seismic response of the geological formation underneath? This question is particularly important since earthquake resistant design rules for a structure do not account for the neighbouring buildings. Moreover it is known now that strong amplifications of the seismic waves occur in sedimentary basin often heavily urbanized (the Mexico City valley, Kobe harbour, cities of Nice or Grenoble).

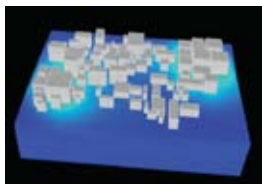
In the framework of the "city effect" project, part of the CNRS-INSU program "natural hazard", the **MSSMat laboratory** of ECP has proposed **theoretical and numerical analyses of the multiple scattering of seismic waves on areas of Mexico City and Nice** taking into account both the diversity of the buildings, their spatial distribution and the complex geology of the sites.

These analyses have shown that even though for soft soils and heavy urban density the interaction between buildings are important, the maximum response of the buildings is not modified in case of seismic waves coming from the bedrock. Moreover, it has been shown that the city behaves as a filter for waves coming from the edges of the sedimentary basin, protecting the buildings located in the centre of the city. However, due to the interactions, increases in the signal duration have been observed in some cases.

G. Lombaert and D. Clouteau (2006), *The resonant multiple scattering in the seismic response of a city*, *Waves in Random Media*, accepted for publication.

N. Mezher (2004), *Modélisation et quantification de l'effet sismique site-ville*, PhD Thesis, Ecole Centrale Paris.

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Simulation of the dynamic interaction between the buildings of the Roma Norte area of Mexico City.

► **Laboratory SPMS :**
Unexpected ferroelectricity under high pressure

Because of their numerous properties, ferroelectric materials are used in a wide variety of fields such as gate oxides in DRAMs, nonvolatile memories in FeRAMs, airbag sensors, echographic sonars, microactuators of Hubble mirrors, filters and resonators of cell phones,... **The ferroelectricity phenomenon is related to the existence of a permanent dipole** due to the non-coincidence of the centre of the ionic charges of the material. For over 30 years, hydrostatic pressure has been commonly thought to reduce and even anneal ferroelectricity by getting the atoms closer and closer. Our works show that, the pressure causes indeed a decrease of ferroelectricity, but unexpectedly, above a certain threshold value, the ferroelectricity happens to reappear and even increase with pressure. We show that at high pressure this new ferroelectricity is not driven anymore by ions moving away from their ideal position but by the repulsion between electron clouds.

Kornev et al., *Phys. Rev. Lett.* 95, 196804 (2005)

Janolin et al., *Phys. Rev. B*, sous presse (2006)

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► **Ecoles Centrale Intergroup Research Conference (CRIEC)**

The 2006 CRIEC edition (Doctoral students from the Ecoles Centrale Intergroup) will take place between the 16th and the 19th of May at Ecole Centrale Paris. The conference'll receive Jacques Lewiner (who has obtained the greatest number of patents) and Jean-Claude Lehmann (former scientific director of CNRS and Saint-Gobain).

► **To know more:**

www.criec2006.ecp.fr

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UPS * Campus day

On May 9th, we will welcome the professors of "classes préparatoires" (UPS) for a seminar on "Nanophotonic".

Four conferences will take place :

- Metamaterials (Daniel Maystre, Institut Fresnel, Marseille)
- Nanophotonic and light emission (Xavier Letartre, LEOM, Ecole Centrale de Lyon)
- Electromagnetic waves (Jean-Jacques Greffet, laboratoire EM2C, Ecole Centrale Paris)
- Societal aspects of nanosciences (Louis Laurent, CEA)

This campus day is an example of our openminded communication towards the "classes préparatoires" lecturers and students. More topics are already planned until 2009.

* UPS (Maths and Physics professors' federation of "classes préparatoires", two years of intensive study to sit the competitive entrance examination to Grandes Ecoles) brings together 90% of the concerned professors.

Physical Education at the Ecole Centrale Paris

Carrier of social integration, the physical and sports activities favour the conditions of health and participate in the élèves ingénieurs' personal and qualifying training.

To be determined for a sports activity in 1st year of common core, to pursue it in 2nd year, makes sure of progressing by developing "individual skills" of driving dexterity and performance, but it is above all acquiring "collective skills" and so participating in the elaboration and in the implementation of projects to live a human adventure. A very wide and very eclectic range of activities is proposed to satisfy each one. The obligation of practice is marked by a biannual evaluation based on specific and general skills.

The contents of education participate in the educational objectives of the student's training: how to communicate and work in team, develop its sense of initiative and its creativity, increase its individual development...

The Athletic Union of the ECP (sports association of the school) extends, on the basis of the voluntary service, the compulsory activity by offering human and material resources to achieve all the projects. Events of international fame are led by the students in connection with the teaching staff of the department of Physical education.

At the Ecole Centrale Paris, Physical Education represents:
1000 practising students / 550 competitors / 30 sports activities
28 sports teachers on contract / 4 teachers with tenure.

A common access mode through a Competitive Examination for Credit Transfer Students, in 1st year, for the holders of a degree in science

The *Ecoles Centrale* and the EGIM managements have decided to share the recruitment of their candidates in the Competitive Examination for Credit Transfer Students. This decision has been taken in order to simplify the modalities of access for all students having a degree in science.

This new measure is the most recent result of the cooperation of the *Ecoles Centrale*, which presents major advantages for the students.



The students preparing a degree in science will, from now on, have to take a single series of tests, containing for year 2006:

- 2 scientific tests according to every candidate's programme
- An English test
- An interview

The candidates will be able to choose an apply to one or several *Ecoles Centrale* (Paris, Lille, Lyon, Nantes and EGIM Marseille - Ecole Généraliste d'Ingénieurs de Marseille -).

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A new step in French-Japanese relationships

For one year, the Ecoles Centrale (Lille, Lyon, Nantes, Paris and the EGIM) have signed 3 double degree agreements with Japanese Universities.

It is a new step in the French-Japanese relations with the Ecoles Centrale, marked by 20 years of regular exchanges.

Following the example of the T.I.M.E. network double degree - including 47 higher institutions in Europe - these agreements bind the Ecoles Centrale with :

- Keio University in Tokyo - first private University in Japan
- Tohoku University in Sendai - second public University in Japan
- Doshisha University in Kyoto - fifth private University in Japan

These 3 Japanese Universities have expressed a very strong demand, on the one hand to reach exchanges at the level of research, with the implementation of these in co supervision, and on the other hand to integrate the T.I.M.E network.

They have met at the Keio University with the Ecoles Centrale and the European representatives of the T.I.M.E. network.

These relationships know an intermediate step today: exchanges and seminars in France and in Japan, in order to identify research topics and joint projects, for the purpose of exchanging PhD students.

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Agreements between the China Scholarship Council (CSC) and the French-Chinese Doctoral Collège

In July 2005, a convention has been signed between the China Scholarship Council (CSC) and the Ecoles Centrale Intergroupe. This agreement, established for a first period of three years, plans China to finance 15 PhD scholarships per year for Chinese students who would like to prepare their PhD in one of the Ecoles Centrale laboratories.

During a mission in China of the Research Directors of the Ecoles Centrale in February - March 2006, a jury selected the candidates in Beijing for the first year. 14 applications have been selected. The future students come from various Chinese Universities and especially from the 4 partner Universities of Beijing, Shanghai, Xi'an and Chengdu. Four of these candidates are former students of the 4+4 programme whose scientific and human qualities put them forward.

The research domains of these future doctoral students are very diversified and cover most of the scientific abilities of our Schools laboratories. Nevertheless, it has been noticed numerous applications for the computer skills domain, networks, automatics, robotics.

The selected students are currently trained in French in their University. They will be coming to

France at the end of August for three years of research and will begin with an intensive internship of French.

A new campaign will be launched at the end of 2006 to begin the PhD studies in September 2007. Projects in co-tutor or co-direction will be stressed between the French and Chinese laboratories.

France and China signed in March 2006 an agreement for the creation of a French-Chinese Doctoral Collège.

The Ecole Centrale Paris, as a member of the CPU (*Conférence des Présidents d'Universités*), is one of the founders of this Collège. This will be an opportunity, in parallel with the actions led with the CSC, to finance one-year trips for doctoral French students in Chinese laboratories.

Therefore, these two-coupled actions will be occasions to deepen sustainable scientific collaborations between the Ecoles Centrale laboratories and the best research teams of big Chinese Universities.

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New! Round-Table conferences on Trades for the second year students

Between 2 and 5 members of companies meet around a trade open to young qualified engineers.

Benefits for the companies:

- To make their company known, their activity sector and perspectives;
- To describe precisely what an engineer job in that firm is;
- To make them known on the campus.

Such meetings are necessary to help the students in their professional choices.

Starting up of the first Round-Table conference on May 19th, 2006: "Consulting and Audit"

ATOS CONSULTING, BOOZ ALLEN HAMILTON, CAP GEMINI CONSULTING, HEMERIA, MAZARS, SYNTEC will take part in it.

The second one will be held on May 31st, on the « Production » trades
The themes in 2006-2007: big projects, civil engineering, distribution and supply chain, finance and insurance, company start-up, mechanical-vehicles-aeronautics, R&D in company, NTIC.

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Partnerships to recruit young engineers qualified from Centrale

Make your company known by personalized, privileged and organized contacts with the third year students. Through your participation in final year areas of concentration or professional tracks corresponding to your needs, you collaborate all along the year, namely: presentation of your company and professions, offers of internships, company-site visits, lectures, seminars, project work, etc.

Thanks to the companies partners of School in 2005-2006 :
ACCENTURE, AIR LIQUIDE, ALCAN, AMADEUS, AMGEN, ARCELOR, AREVA, ARKEMA, AT KEARNEY, BAIN & COMPAGNIE, BNP PARIBAS, BOUYGUES CONSTRUCTION, BPB PLACO, BUREAU VERITAS, BUSINESS OBJECTS, CALYON, CARREFOUR, CASINO, CEA, CETELEM, COMPAGNIE GENERALE DE GEOPHYSIQUE, COLAS, CRT, DASSAULT AVIATION, DASSAULT SYSTEMES, DEUTSCHE BANK, DIAMOND CLUSTER, EADS, EDF, EIFFAGE, ERCOM, ERNST & YOUNG, FAURECIA, GROUPE AXA, GUINTOLI, IBM France, IFSBM, IXSEA, JP MORGAN, KLEE, L'OREAL, MAZARS, MCKINSEY&COMPANY, MERCER MANAGEMENT CONSULTING, MICHELIN, NATEXIS BANQUES POPULAIRES, PEA Consulting, PRICEWATERHOUSECOOPERS, QUALICONSULT, RENAULT, SAINT-GOBAIN, SAIPEM, SCETAURROUTE, SCHLUMBERGER, SERENSIA, SKF France, SNCF, SNECMA MOTEURS, SOCIETE GENERALE, SOLETANCHE BACHY, SOLVAY, SPIE BATIGNOLLES, STERIA, SUEZ ENVIRONNEMENT, SYNTEC, THALES, THE BOSTON CONSULTING GROUP, TOTAL, UNIBAIL, UNILOG, VALLOUREC, VEOLIA ENVIRONNEMENT, VINCI.

► **Contact :** corporate partnership – sylvie.mazurat@ecp.fr

In a few words

The 16th companies partnership's day

Reserved for the 80 companies partners of the final year areas of concentration and the TIME PLUS Club.
A.M: partnership committees of the final year areas of concentration
Midday: lunch
2:30 pm: Annual meeting of the TIME PLUS Club.
On that day, everyone in its committee has the opportunity to evaluate the collaboration during the year and to prepare actions for the coming year.

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Centrale Forum Entreprises 2006

The Centrale Forum Entreprises will take place, November 28-29, on the campus.

Contact : forum@ecp.fr

Forward your offers of training courses and jobs

YOUR TRAINING COURSES OFFERS

Operator training:

At least 6 weeks at the end of the 1st year
(from 2006/06/19 to 2006/09/08)

Internship Abroad:

At least 6 weeks at the end of the 2nd year
(from 2006/06/19 to 2006/09/01)

Final internship:

6 months at the end of the 3rd year
(from 2006/04/24 to 2006/11/17)

Contact:

The Office of the Training in Companies:
de-bfe-stages@ecp.fr

YOUR JOB OFFERS

Contact:

Association des Centraliens, Service Carrières & Emploi
carrieres@centraliens.net

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* *Mastère Spécialisé* is a specialised, postgraduate training programme.

A great day for the *Mastères Spécialisés'* 20th anniversary on 9th June 2006

The *Mastères Spécialisés* Community will meet at the *Grand Amphi* for their 20th anniversary. An opportunity for the students who have finished their schooling, to receive their *Mastère Spécialisé* degree.

Some details on this event :

- 2:30 pm: Welcome in the Big Hall of the Enseignement Building
- 3:00 pm: Short speech by Hervé Biauxser, Director of the ECP

Testimony of three former *Mastères Spécialisés*:

Eric B. General Manager of Chryso
 Bernard Boutin, Director of Information Systems of the ECP
 Christine Gueri, Assistant Manager of the quality and the communication of the patient at Paul Brousse Hospital in Villejuif.
 Short speech by Dominique Pareau, Dean of Studies of the ECP

- 4:15 pm: Graduation Ceremony of Class 2005

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Be ready for the Raid Total Centrale Paris 2006

There are only few weeks remaining to be prepared and trained before the Raid Total Centrale Paris! The 2006 Raid will take place between the 4th and the 8th of May with more than 200 participants in teams composed of 4 persons each in the middle of the Dauphiné-Savoie region. There are 4 events: running, mountain bike, rope and water sport. In its large organization, more than 70 students of first and second school year take care of the Raid Total Centrale Paris all along the year: itinerary, organization, safety and environment, relationships with enterprises, taking charge of the teams, marketing and communication, etc. Meet us on the 3rd of May at Oulx!

► **To know more:** <http://www.raidecp.net>

Centrale 7: The most famous university teams on the Ecole Centrale Paris Campus

For the second year, on 10th and 11th of May 2006, the university tournament Centrale 7 welcomes teams from all over the world in particular two from the South hemisphere. For the French part, the best university teams like Toulouse, Brives-Limoges will be there. They will face European teams: Oxford, winner of the 2005 tournament and Loughborough, the UK university champion. Will also be present: the Italian team, the Euskarians (university selection of French and Spanish Basques), the university team of Buenos Aires and the South African university selection.

The day before the tournament, teams are invited to a visit of Paris and to a lunch at the Maison des Centraliens. That day will end at Ecole Centrale Paris by a roundtable on the theme "Between traditions and evolutions, at the skyline of the 2007 World Cup" (with P. Berbizier, Coach of the Italian Rugby team) and the vernissage of the exhibition "Another glance on Rugby" under the artistic direction of R. Blachon, cartoonist of *L'Equipe*.

► **To know more:** www.centrale7.com



■ Ranking French engineering schools by the *Nouvel Economiste* (march 2006)
 Ecole Centrale Paris, Nr. 2 general ranking, Nr. 1 in added knowledge *

Each year, the *Nouvel Economiste* (weekly edition) makes a ranking of French Engineering schools (Grande Ecole d'Ingénieurs) based on the opinion of Human Resources Directors of the largest French companies. On a panel of 600 professionals, 201 Human Resources directors and head hunters replied to the enquiry. They evaluated, on a scoring from 1 to 10, 40 French Engineering schools, and answered the question : "Among these 40 high level trainings, please classify the best ones' with a scoring from 1 to 10". This indicator correlates the corporate image of French Engineering schools.

* added knowledge : evaluation according to an established list

■ The build-up area community of Hauts-de-Bievre commits itself with ECP to support the company creators

Georges Siffredi, President of the build-up area community of Hauts-de-Bievre, signed with ECP on 22nd February 2006, a partner convention in order to support a company start-up process. Indeed, the build-up area community of Hauts-de-Bievre has given a financial support of euros 15,000 with the aim of financing office equipment and research material. This implementation completes and extends, in a natural way, the various pedagogical devices leading to the company creation put in place by the School.

■ Innovation and Sustainable Development Award

Launching of the Innovation and Sustainable Development Award in partnership with three Higher Institutions (Ecole Centrale Paris, ESCP-EAP Management School, INA P-G Agronomics), the "Collège des Hautes Etudes de l'Environnement & Développement Durable - CHEE&DD" and Capgemini Consulting.

This competitive Examination is open to all students and enrolls the pedagogical programme. 12 projects have been selected for the Award, the ceremony will take place on 30th May at the Senate "Palais du Luxembourg" (Paris).

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EM Lyon and Ecole Centrale Paris launch a new *Mastère Spécialisé* for engineers and business developers

(following the first page)

This MS is aimed at young graduates - Schools of engineering or Masters of Science - whose undertaking is in the large and medium-sized international companies, in following areas:

- Data-processing and telecommunications;
- Civil engineering and development;
- Mechanics, aeronautics and energy;
- Process engineering, environment, life science;
- Advanced systems.

This MS prepares to jobs sought today by companies as:

- Business engineer;
- Negotiator of international business;
- Business developer;
- Manager of a profit center or a subsidiary company...

The schooling is shared between Lyon (campus EM Lyon - September-December) and Châtenay-Malabry (campus Ecole Centrale Paris - January-March), followed by an internship from 6 to 9 months.



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► To know more:

- www.em-lyon.com/ms
- www.ecp.fr
- Download the presentation (in French)

Mastère Spécialisé is a specialised, postgraduate training programme.