

WIDEN YOUR HORIZONS

**ENGINEERING GRADUATE
SCHOOL IN PARIS**

WELCOME TO ISEP!



Michel Ciazynski
ISEP General
Managing Director



ISEP is a French engineering graduate school in information and communication technologies, known as a "Grande École d'Ingénieurs". ISEP trains very high-level graduate engineers who receive a thorough training in Electronics, Telecommunications, Software Engineering and Signal-Image Processing, providing them with the required knowledge to meet the needs of businesses. Since 2008, ISEP has been offering an international French Engineering Master Degree Program which allows international students to obtain the Master Degree. Thanks to a strong partnership with the companies in related industries, this program includes a professional internship.

M. Ciazynski





WHY CHOOSE ISEP?

ISEP is well known by the excellence of its education. The French Engineering Master Degree Program is accredited by the National Engineering Committee (CTI). Isep is a member of the "Conférence des Grandes Écoles" and also renowned for its research, its international relations and its strong industrial links. Our program is taught in English and it provides students with optimal preparation for the current demands of the job market.

RESEARCH

The research laboratory of ISEP, the LISITE (Laboratoire d'Informatique, Signal et Image, Télécommunication et Electronique), is composed of 3 teams : MINARC, which works in micro, nanoelectronics and radiocommunications, SItE, which conducts research on Signal, Image and Telecommunications and RDI, which manages research and development in information sciences. The laboratory maintains close relations with industrial partners and universities and participates in projects funded by the French government and the European Union.

INTERNATIONAL

More than 300 international students per year demonstrates the attractiveness of ISEP. The school has more than 100 university partnerships in 5 continents. ISEP also welcomes many international professors from prestigious universities like Stanford, Berkeley or IISc...

INDUSTRIAL LINKS

Built around the real needs of the business world, ISEP graduates engineers benefit from an excellent reputation. They are particularly

appreciated by industrial firms for their ability to become quickly operational and efficient. Moreover, 150 lecturers coming from various industries are taking part in the training of our students.

STUDENT ACTIVITIES

ISEP also has many student clubs ranging from sports to sciences and technology... Among them, the ISEPA student association is in charge of the development of cultural exchanges with international students (please see page 5).

FRENCH ENGINEERING MASTER DEGREE PROGRAM



The French Engineering Master Degree Program (FEMDP) is a 4-semester program. This degree is recognized by the French government, accredited by the national French engineering committee CTI. In addition, it is recognized as an international Master degree within the European Bologna scheme. As proof of its international excellence, ISEP has received the label EUR-ACE in 2012.

STUDENT CAN CHOOSE ONE OF THE FOLLOWING SPECIALIZATIONS:

- Embedded Systems.....P6
- Software Engineering.....P8
- Wireless Telecommunication and Network SystemsP10

The program is open to graduates with a Bachelor's degree in Science/Engineering or to students who are in the last year of University in the relevant disciplines e.g. Electrical Engineering, Electronic Engineering, Telecommunications, Computer Science, Computer Engineering, Information Technology, etc.

PLEASE PROVIDE THE FOLLOWING DOCUMENTS:

- Completed application form (to be filled out on line)
- Curriculum Vitae
- Statement of purpose
- 2 letters of recommendation
- Copy of transcripts for each university previously attended as well as certified translations into French or English, including a copy of the degree
- TOEFL (minimum score 550 PB/213 CB/79IBT or equivalent.)
- Copy of passport
- Bank statement attesting that the student will have financial support during his/her studies

USEFUL INFORMATION

Housing

ISEP helps international students to be housed in a residence hall, a private room or a flat, thanks to our private housing database.

Pre-arrival Information

We recommend you arrive 2 weeks before the program starts.

Upon enrollment, you will be given the ISEP "Guide for International Students". It will give you practical information about administrative procedures, living expenses, transportation, health insurance, etc.

In addition, all ISEP students will receive an "ISIC card". It offers a lot of advantages: discounts on planes or trains travel, car rental, hotels, restaurants, leisure activities, etc...

FOR FURTHER INFORMATION :

For more information about the French Engineering Master Degree Program, please contact:

Phone: +33 (0)1 49 54 52 24

Fax: +33 (0)1 49 54 52 01

E-mail: femdp@isep.fr

Website: <http://en.isep.fr>



Created in October 2012, ISEPA is run by a dynamic and motivated team willing to help students coming to ISEP from all around the world. In a nutshell, ISEPA's mission is to welcome them and make sure they find their way quickly in Paris.

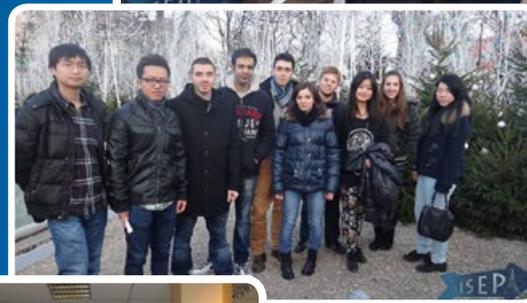
Throughout the year, the team organizes activities and visits, while trying to erase the cultural and language barriers by creating moments of exchange between the French and international students. Foreign students will discover French culture thanks to the Christmas Day for instance but will also be able to share their culture for the Chinese New Year, Diwali Festival and other cooking events.

ISEPA's particularity is to accompany students in their professional projects (helping them to write a resume and letter of motivation for example). ISEP is truly the place where students can share and cultures can blend.

If you are an international student, ISEPA is the perfect place for you to discover the beautiful French culture and take part in ISEP's exciting student life!

You can easily contact ISEPA on the Facebook group "ISEPA international students" or using the website : www.isepa.fr.

JOIN US!



EMBEDDED SYSTEMS



OBJECTIVES

The embedded systems are the heart of automatic devices in our daily life. The design of embedded systems represents an economical stake for manufacturers : it increases the value of equipments and improves the competitiveness of companies. France has several worldwide industries in aerospace, in military and space industry, in energy, in rail, in telecommunications, automotive etc. which are users of embedded systems for decades : EADS, Thales, Airbus, Renault, etc.

The embedded systems major addresses the design, the implementation and the management of complex systems (aircraft, cars, trains...). The competences involved are the design of standardized and reliable functioning hardware and software devices/objects. The acquired knowledges cover the fields of electronics and software engineering at system level design.

JOB PROSPECTS

Equipement manager, system expert, project manager, embedded platform architect, embedded technologies expert/support manager, embedded applications architect, Software Development expert, Qualification/validation Expert, Test expert, integration expert/manager, process & methods/quality/certification expert.



COURSE CONTENT

SEMESTER 1

PROJECT-BASED LEARNING IT

- Database management system : relational and object models, database schema, queries
- Software engineering
- WEB architecture : client, server, communication protocols
- HMI : ergonomics, dynamic contents generation, formatting

NETWORK FUNDAMENTALS

- Network communication
- Layer approach
- OSI model
- TCP/IP model
- Network devices
- Network addressing models
- Communication channel

SIGNAL PROCESSING

- Frequency analysis: FFT
- Digital Filtering : filters, linear prediction
- Interpolation, Decimation

JAVA PROGRAMMING

MANAGEMENT TRAINING

- Economic principles
- Intercultural relations
- Corporate organization
- International sales
- Communication, negotiation

FRENCH LANGUAGE COURSE

COMPUTER ARCHITECTURE

- Buses - the address decoding
- Interruptions - the start of a system
- Exchanges on DMA mode
- Cache memory
- Virtual memory
- Introduction to DSP
- Labs
- Microcontroller and power consumption optimization

SYSTEM PROGRAMMING

- Multitask system, process and task scheduler
- Memory management
- File system

PROJECT AND INTRODUCTION TO RESEARCH

- The project is composed of a case study. The students will be called upon to use the knowledge, design techniques and tools that they learnt through their courses. Students interested in research can join one of ISEP's research team to work directly with faculty members

MANAGEMENT TRAINING

- Supply and Demand
- Firms and Markets
- The Government and the Economy
- Macroeconomics: Introduction
- Monetary and Fiscal Policy
- The Open Economy

FRENCH LANGUAGE COURSE ENGLISH LANGUAGE COURSE

- Internal and external bypass, fullpath systems
- Embedded calculators and their design

CONSTRAINTS AND SYSTEMS IMPLEMENTATION

- Methodology development cycles and systems
- Life cycle of software/of hardware
- System Simulation
- Tools for formal proof
- Real-time UML

SAFETY AND RISK ANALYSIS

- Failure trees – failure density, failure rate.
- Reliability of components, of boards, of systems, life duration, physical failure analysis - methods and tests.
- Redundant systems, serial, parallel, vote, triplication.
- Coded systems.
- Standards on quality, standards on safety.
- Electromagnetic compatibility of systems.

RELIABILITY

- Reliability of components
- Reliability of cards
- Life cycle

SYSTEM IMPLEMENTATION

- Algorithm implementation (complexity, specific architectures)
- Standards and low consumption communications modules

PROJECT

- The project is composed of an advanced case study. The students will be called upon to use the knowledge, design techniques and tools that they learnt through their courses.

FRENCH LANGUAGE COURSE

SEMESTER 2

ARCHITECTURE AND VLSI DESIGN

- Internal architecture of a RISC microprocessor
- Digital VLSI circuit design
- Labs

ADVANCED OPERATING SYSTEMS

- Multitask system, process and task scheduler
- Memory management
- File system

SEMESTER 3

AUTOMATIC CONTROL

- System model
- State space
- Optimum command theory
- States representation
- Consideration of random phenomena

EMBEDDED CALCULATORS

- Embedded Bus (1553 bus, CAN bus ...)
- Architecture of distributed computing
- Rapid Prototyping

SEMESTER 4

INTERNSHIP

The internship with an international company will enable students to display valuable professional skills and attitudes developed during the three academic semesters. ISEP will help you in finding an internship. Companies usually give a stipend to the trainees.

SOFTWARE ENGINEERING



OBJECTIVES

With the rapid development of computerization and networks in our daily life, the software development is unavoidable. The needs of talented software engineers with a good expertise and capacity for technology monitoring are required to tackle new markets and to innovate in software.

The software engineer is an expert who can adapt himself/herself in any environment. He/She is involved in the design, implementation, development of software in several industrial domains. He/she has a global view and a large knowledge from hardware to algorithm layers.

JOB PROSPECTS

IT consultant, IT project manager, expert of development in major industrial groups (Banks, Automotive, Aircraft...) or start-up, R&D in software industry (IBM, Google, Microsoft...)

COURSE CONTENT

SEMESTER 1

PROJECT-BASED LEARNING ET

- Analog signal: conditioning processes
- Fourier series and transform
- Analog and Digital filtering
- A-D conversion
- Complex digital operators

NETWORK FUNDAMENTALS

- Network communication
- Layer approach
- OSI model
- TCP/IP model
- Network devices
- Network addressing models
- Communication channel

SYSTEMS SECURITY

- Information systems security
- Web application security
- Network Security
- Introduction to Cryptography
- Reliability, performance and redundancy of equipment and service
- Legal aspects and regulations

ADVANCED DATABASE

- Relational model : Relational Algebra, Normal form, PL/SQL Language
- Integrity and Transaction
- Indexation
- Queries Optimization
- JDBC

MANAGEMENT TRAINING

- Economics principles
- Intercultural relations
- Corporate organization
- International sales
- Communication, negotiation

FRENCH LANGUAGE COURSE

SEMESTER 2

WEB TECHNOLOGIES

- Client-side Web application : Anatomy of (new generation) Web applications ; Methods and development process for the WEB ; HTML5, CSS3/4 ; Responsive design applications ; Frameworks and JavaScript tools, Ajax, Java ; GWT, AngularJS ; PhoneGap
- Server-side Web application : Advanced Java; threads, XML serialization ; Sockets ; Servlet ; JSP ; MVC architecture ; Data Persistence: JPA, Hibernate ; Vaadin

ADVANCED OPERATING SYSTEMS

- Multitask system, process and task scheduler
- Memory management
- File system

SYSTEM INTEGRATION

- Scope of system integration, software porting, revamping, reverse engineering, mashup
- Integration into the information system : portals and SOA
- Integration process and activities
- Components evaluation and validation
- Open source strategy
- Integration tools : ERP, ETL BPM, BI
- Integration patterns, Spring integration, Apache Camel
- Test and validation
- Development frameworks integrationProject

SYSTEM PROGRAMMING

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FRENCH LANGUAGE COURSE ENGLISH LANGUAGE COURSE

SEMESTER 3

ADVANCED ALGORITHMS

- Complexity classes
- Heuristics and approximation algorithms for solutions
- Linear programming and search for optimum
- Graph Theory (flow problems, shortest path, ...)
- Genetic algorithms, Probabilistic algorithms
- Data mining and classification
- Neural Networks

MOBILE DEVELOPMENT

- Introduction to the dedicated services for mobiles: what is mobile technology ; everywhere and anytime ; services by activity field (transport, health, trade, ...)

- Handsets capabilities and market overview
- Android development basics
- Android tutorials
- Project

ADVANCED WEB TECHNOLOGIES

- Software infrastructures and Web services: Software factories (Maven) ; JEE (JSP, Servlets, Web services and Web app, REST architecture)
- Enterprise and information systems architecture : SOA (Service Oriented Architecture) and Web services

IT SECURITY

- Data security
- Secure Programming
- Main application vulnerabilities (Cross scripting (XSS), SQL injection, ...)
- Risks associated with new technologies: smartphones, cloud ...

DISTRIBUTED PROGRAMMING AND ARCHITECTURE

- Typology of distributed systems
- Distributed applications properties : interoperability, scalability / elasticity, load balancing, consistency, fault tolerance
- Communication : Protocols, Topologies
- Concurrent programming : Concurrency models, Concurrent application patterns
- Distributed Algorithms
- Distributed application patterns

PROGRAMMING LANGUAGES AND COMPILERS

- Lexical analysis
- Syntactic analysis and grammar of a language
- Semantic analysis
- Abstract Syntax Trees (AST)
- Type inference
- Compilation algorithms
- Compilers structures (AST visitors)
- AST transformation and code generation

PROJECT

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FRENCH LANGUAGE COURSE

SEMESTER 4

INTERNSHIP

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WIRELESS TELECOMMUNICATION AND NETWORK SYSTEMS



OBJECTIVES

The Wireless Telecommunication and Network Systems specialization presents gradually all the necessary building blocks for the design, the planning, the deployment and the optimization of mobile wireless communication networks. The digital techniques for transmission and communication are also

presented. The Wireless Telecommunication Systems engineer is an expert who can anticipate the changes in the evolving telecommunication field. He/she has the know-how to implement the next generation technologies and to provide new services by operating the highly efficient networks.

JOB PROSPECTS

R&D engineer, Integration Engineer, Validation Engineer, Research Engineer, Telecommunication Support Engineer, Technical Sales Engineer, Telecom Project Manager

COURSE CONTENT

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PROJECT-BASED LEARNING IT

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JAVA PROGRAMMING

MOBILE NETWORKS

- Architecture, engineering and monitoring of mobile networks and wireless networks
- Radio Propagation Characteristics (noise, interferences, error correction)
- Antenna and Radio-relay link
- Communication protocol exchange between mobile terminals and networks

FRENCH LANGUAGE COURSE

SEMESTER 2

SYSTEMS SECURITY

- Information Systems Security
- Web Application Security
- Network Security
- Introduction to Cryptography
- Reliability, Performance and Redundancy of Equipments and Services
- Legal aspects and regulations

LOCAL NETWORK SWITCHING

- Ethernet Switching
- VLAN
- Spanning Tree
- WIFI

ROUTING PROTOCOLS AND CONCEPTS

- Static Routing
- Dynamic Routing (RIP, EIGRP, OSPF)
- Classless Addressing (VLSM, CIDR)
- Distance-Vector Routing Protocols
- Link-State Routing Protocols

AMBIENT INTELLIGENCE

- constraints imposed by the different types of ambient networks, in terms of power, interferences, identification, security, dynamical routing, and the fundamental differences between ambient networks and hierarchical communication networks,
- access protocols, at physical and MAC layers,
- dynamical routing protocols in ambient networks.

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FRENCH LANGUAGE COURSE ENGLISH LANGUAGE COURSE

SEMESTER 3

NETWORK SECURITY

- Implementation of different security methods: authentication: AAA / RADIUS server, 802.1X, EAP, ... ;for remote access: Virtual Private Network (VPN) including in particular VRF protocols, IPsec, SSL / TLS, ...
- Securing access using firewalls and selection of associated network architectures (DMZ, NAT)
- Securing Wireless Networks: GSM Security, UMTS, Bluetooth and Wi-Fi: 802.11 WEP wireless security protocol ; he 802.11i standard; authentication mechanisms and data encryption (WPA, WPA2, CCMP, TKIP)

BROADCASTING AND LOCALISATION

- Satellites and GPS (Global Positioning System)
- Geo-localization
- Broadband and Optical Networks (xDSL, FTTH, DWDM)
- DVB (Digital Video Broadcast)
- FWBA, LMDS, MMDS

CONVERGENT SERVICES AND TECHNOLOGIES

- Voice over IP (signalling, addressing, ...)
- Unified communications
- NGN, IMS (protocols and infrastructure)
- Cloud Computing

MOBILE DEVELOPMENT

- Introduction to the dedicated services for mobiles: what is mobile technology : everywhere and anytime ; services by activity field (sports, health, trade, ...)
- Handsets capabilities and market overview
- Android development basics
- Android tutorials
- Project

PROJECT

- The project is composed of an advanced case study. The students will be called upon to use the knowledge, design techniques and tools that they learnt through their courses.

MANAGEMENT TRAINING

- Economics principles
- Intercultural relations
- Corporate organization
- International sales
- Communication, negotiation

FRENCH LANGUAGE COURSE

SEMESTER 4

INTERNSHIP

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Great reasons to apply to ISEP in Paris

Starting salary of **43,000 €** on average

100% of students employed after graduation

About **300** international students per year

More than **100** partnerships worldwide in **43** countries

150 lecturers coming from within the industry

40 student clubs and organizations

Corporate partnership with more than **500** companies
Internship (1 semester)

A dynamic alumni network (more than **6 000** alumnis)

www.isep.fr

Engineering Graduate School in the heart of Paris!

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