

8. FR: France

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8.1. General information

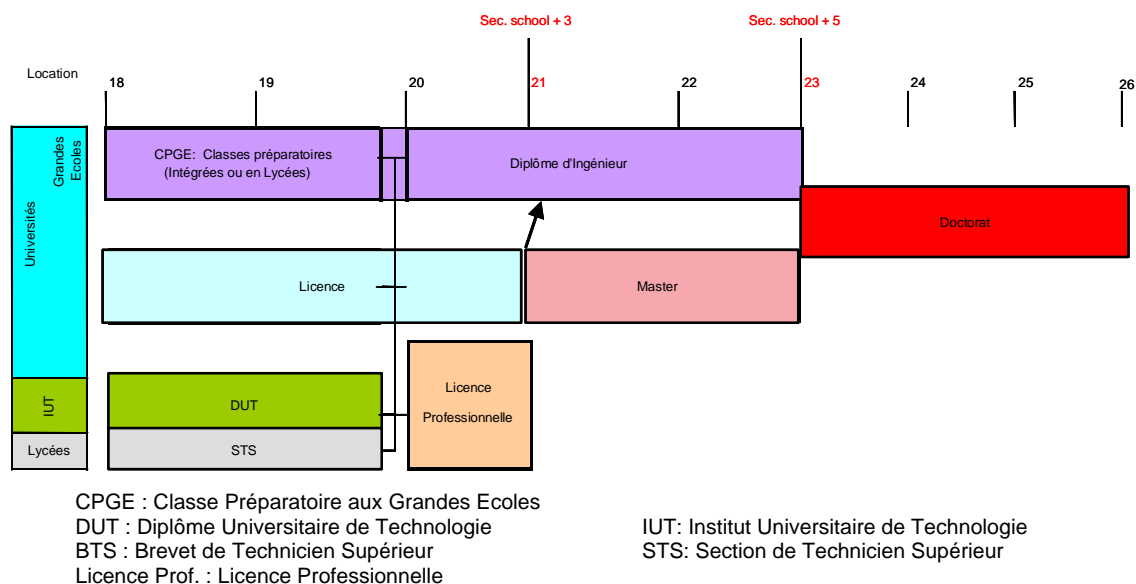


Figure 8.1: French Higher Education System in EIE disciplines in 2008

<p>FR: France</p>	<p>General information [REF 1], [REF 12]</p> <p>"France has taken an important reform decision. A first outcome was the decision in 1999 to make the licence a genuine terminal degree relevant to the labour market, and to launch the "licence professionnelle". In April 2002 the government signed several legal texts, pertaining amongst other matters to the introduction of a 3+2 structure in the universities, with a Licence (Bachelor) and a Master, starting with the Academic Year 2002/03. In August 2006, the French Ministry achieved the BMD process, by publishing a new official text on doctoral studies that includes the merging of the two initial profiles of Masters – research Masters and professional Masters. Every university in France is nowadays ruled under the Bologna-process scheme.</p>
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Institutional point of view

In France, there are several kinds of academic institutions:

- Universities, which propose:
 - Classical curricula: *Licence* (bachelor), 3 years, followed by *Master*, 2 years. Generally the master is organised in the following way:
 - 1st year of *Master* which is quite general
 - 2nd year of *Master* which could be professional or research-oriented.
- After the master, it is possible to apply for a *Doctorat*, whose the normal duration is 3 years.
- Professional curricula
 - ♦ Superior Technician level (*Diplôme Universitaire de Technologie - DUT*) prepared in Institut Universitaire de Technologie - IUT,
 - ♦ Industry-oriented bachelors ("*licence professionnelle*"), this is just the 3rd year after the 2 first years of *licence* or *DUT* or a *BTS*.
 - ♦ Graduate schools of engineering ² which prepare engineering graduation (*Diplôme d'Ingénieur*); the *Master* grade is automatically associated with this degree.
 - Graduate schools of engineering ²
 - Classical graduate schools of engineering, which offer 3 year courses. The students are selected, on the base of a contest, after a "*classe préparatoire*" curriculum (*Classe Préparatoire aux Grandes Ecoles - CPGE*); the duration of CPGE curriculum is usually 2 years.
 - Integrated graduate schools of engineering, in which most students spend five years in the same school in order to get their engineer qualification.
 - Secondary schools
- Secondary schools (in French *lycées*) offer two kinds of academic studies:
- CPGE see above,
 - STS (*Section de Technicien Supérieur*) preparing students towards *BTS* (*Brevet de Technicien Supérieur*), Superior Technician level.
- These curricula prepared in "*lycées*" are not detailed in this study.

Degree points of view

- The degree mandatory to enter the Higher Education system is "**Baccalauréat**", which is delivered at the end of the secondary school. In France, this degree permits to apply to the academic system. Classical universities are open to any student, whereas *IUT*, *STS*, *CPGE* and *Ecoles d'ingénieurs* organise their own selection.
- undergraduate degrees, before Bachelor (sec. sch.+2) ³

Degree (institution)	Selection to enter	Possibility to pursue studies
<i>Classes préparatoires</i> , not validated by a degree but only through ECTS	Yes	- Ingénieur, - licence 3 rd year then master

² graduate schools of engineering belong to different categories : under the aegis of ministry of Higher Education as department of universities or "independent" institutions, under the aegis of other ministries (Industry, Agriculture, Defence, ...) or supported by private consortia or foundations

³ *BTS* and *DUT* are professional degrees, recognised by industry, but students may pursue studies in licence or licence professionnelle curricula.

EIE-Surveyor

<i>BTS, DUT</i>	Yes	- Licence 3 rd year - Licence professionnelle
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- Bachelor level (sec. sch.+3)

Degree (institution)	Selection to enter	Possibility to pursue studies
<i>Licence</i>	No	- master - Ingénieur
<i>Licence professionnelle</i> ⁴	Yes	

- Master level (sec. sch.+5)

Degree (institution)	Selection to enter	Possibility to pursue studies
<i>Master</i>	Yes	Doctorat (3 years)
<i>Ingénieur</i>	Yes	Doctorat (3 years)

⁴ After a *licence professionnelle*, the students should get a professional position, it is the purpose of this curriculum. Nevertheless, some students pursue studies either in last year of classical licence or in master.

- Doctorate level (sec. sch.+5)

Degree (institution)	Selection to enter
<i>Doctorat</i>	Yes (by <i>Ecole Doctorale</i> – see below)

The doctoral studies are managed by an administrative structure, the doctoral school (*Ecole Doctorale*), called graduate or post-graduate school in some countries. This school based on the researchers of research laboratories is frequently common to several institutions (universities, graduate schools of engineering, etc.), because the attached laboratories are also frequently common. Indeed, depending of the place (very large city or smaller one), of the presence of several institutions able to prepare the PhD students in a geographic area, the structure may concern several laboratories or research departments of several institutions. The aim is to build a relatively light administrative structure able to manage and drive the doctoral studies and to prepare the future doctors the professional life.

- *Habilitation à Diriger les Recherches*

This degree is usually devoted to associate professor or researcher with public or private research organisms. It is mandatory to supervise PhD students and also to apply for "full professor" position. The HDR defense looks like a thesis one, but could be considered as a compilation of research activities in order to show that colleagues are able to manage a research team.

Degree (institution)
<i>Habilitation à Diriger des Recherches - HDR</i>

Electrical and Information Engineering in France, boundaries of the field of study

Historically in France, EIE is split in two disciplinary fields:

- EEA for *Electronique, Electrotechnique et Automatique* Electronics-Electrotechnics (power systems) - Automatic control (EEA) which corresponds to Electrical Engineering and Sciences,
- Informatics which corresponds to Computer Science and Engineering.

We could also notice that Embedded systems is a "new" field at the border between the two fields described above.

Within the *CNRS (Centre National de la Recherche Scientifique / National Centre for Scientific Research)*, EIE is gathered with other disciplines in a department called *ST2I*⁵ (*Sciences et Technologies de l'Information et de l'Ingénierie / Information and Engineering Science and Technology*).

Content, degrees and accreditations

Depending upon the kind of degrees, the pedagogical contents are:

- determined at a national level (national pedagogical programme) for the *DUT* and *BTS* for example,

⁵ <http://www.cnrs.fr/st2i/>

- determined by each university autonomously within a four-year contract with the French Government sometimes in partnership also with representative of the professional unions (*licence professionnelle, master*).

In France, the universities, which are autonomous, have to sign an agreement with the Ministry every four years, taking into account the whole set of curricula proposed within the university.

The graduate schools of engineering (*Grandes Ecoles*) have a specific system, in which they are relatively free concerning the organisation and the contents of the curricula. However, to be recognised as an engineering school, they have to comply with some rules coming from the *Commission des Titres de l'Ingénieur - CTI* (Commission for the engineer titles ⁶). This *CTI* checks with periodic intervals whether each school respects the rules.

⁶ <http://www.cti-commission.fr/>

8.2. Figures on the weight of EIE in France

In this part, some global statistics on numbers of students in curricula in Electrical and Information Engineering are given. In the following part (9.3) of the document, there is a breakdown of these figures into specific degree specialities (see references in 9.4). The figures are issued from synthesis documents published in 1999 or 2000. To get more recent but partial results connect to the website of French Ministry⁷

	Level of the degree	Total number of students	Number of students in the field of EIE	Percentage
Sup. Technician	BTS	94892	12298	12.96 %
	DUT	46701	10768	23.06 %
Licence or Bachelor	Licence professionnelle ⁸	New degree in 2001		
"	Licence		3909	
"sec. + 4 y."	Maîtrise		3201	
	Maîtrise-IUP	8761	2534	28.92 %
Master	DEA		2240	
"	DESS	28885	4466	15.46 %
"	Diplôme d'ingénieur		9673	
"	Other master degrees		2187	

Other figures

In 2001, there were:

- 43948 scholars in scientific *classes préparatoires aux grandes écoles (CPGE)*, both in 1st and 2nd year.
- 63446 students in first year of university (*sciences des structures et de la matière / Structure and material science*).

Some general statistics on students [Repères et références statistiques - édition 2001]

These figures are proposed per cycle:

- 1st cycle means 1st and 2nd year after secondary school (1st and 2nd year of bachelor)
- 2nd cycle means 3rd and 4th year after secondary school (3rd year of bachelor and 1st year of master)
- 3rd cycle means 2nd year of master

DUT and engineer schools are considered in these figures.

	1 st cycle	2 nd cycle	3 rd cycle	Total
Materials science and structures (math -physics-chemistry)	63446	27555	12503	103504
Science and technology - science for engineers	14340	62012	16865	93217
Students in <i>IUT</i>	118829			118829
TOTAL (all fields)	705644	481089	218660	140539 3

⁷ Site of French Ministry: <http://www.education.gouv.fr/cid5498/les-etudiants.html>

⁸ This is a curriculum available since 2001. Most students come from DUT or BTS, some from Licence 1 and 2. Normally, this curriculum leads to industry. In 2001, there were **1100** students in these "*licences professionnelles*" (4400 students for all the "*licences professionnelles*").

CPGE all fields (2 years together)	43948			43948
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Students in Electrical and Information engineering are made up of the students studying "Material science and structure" and students studying "Science and technology - science for engineers", as well as 23.06 % (see figures above) of students in IUT.

The following table is issued from 2007 data of French Ministry. In this new presentation, there is no longer difference between fundamental science and applications.

	Bachelor	Master	Doctorate	Total
Fundamental sciences and applications	83604	66180	15593	165377
Students in IUT	113769	-	-	113769
TOTAL of students (all fields)	878053	452886	68238	1399177
CPGE in scientific field	47772			47772
TOTAL CPGE (all fields)	76160			76160

8.3. Degrees in EIE in France

Before bachelor / Superior technician level (Sec. sch.+2)

Diplôme Universitaire de Technologie (D.U.T.) / Academic degree of technology

Specialities (French)	Specialities (English)	DUT (1999)	Number of geographical sites	Keywords (EIE)	Keywords (beh. Skills)	Keywords (others)
<i>Génie Electrique et Informatique Industrielle (GEII)</i>	Electrical Engineering and Industrial Computing	4307	55	Electrical engineering (bet. 22.6 and 26%), industrial computers: Local networks (bet. 22.6 and 26%)	Communication (6%), English (6.2%) project (12%), training period (15.6%)	Maths, physics (11.4%)
<i>Réseaux et Télécommunications</i>	Networks and Telecommunications	811	20	Electronics (10.4%), computers (12.8 %) Signal (1.6%) Telecommunications (9.2%) Networks (12.8%)	Communication (5%), English (5%), economy (2.4%) project (12%), training period (15.6%)	Maths, physics (13.2%)
<i>Services et Réseaux de Communication*</i>	Communications services and Networks	386	20	Networks and communication systems (14.5%) Informatics (10.8%)	Communication (11.1%), Foreign languages (11.1%), Projects (12%) Training period (15.6%)	Communication, new technologies, multimedia (24.7%)
<i>Informatique</i>	Computers	3668	40			
<i>Qualité, logistique industrielle et organisation *</i>	Quality, industrial logistics and organisation		22	Automatic control (4%), Production (30%) Computers (10%)	Communication (7%), English (7%), management (7%) project (10%), training period (18%)	Mechanics (7%)
<i>Mesures physique option techniques</i>	Physical measurement Option "instrument	1596	25	Electronics (8%), Metrology-Quality (3.6%) Automatic control (1%) Power systems (1%)	Communication (4%), English (4.4%), management (7%) project (7.2%), training period (15.6%)	Mechanics, therm., optics, chemistry, maths. (48.2%)

<i>instrumentales*</i>	technics"					
<i>Génie mécanique et Productique*</i>	Production and Mechanical engineering			Electronics (4%) Automatic control (4.5%) Computers (2%)	Communication (5.4%), Foreign languages (5.4%), Economy (1.6%), Projects (4.5%) Training period (17.5%)	Mechanics, Production, Maths. (55.1%)
<i>Génie industriel et Maintenance*</i>	Industrial engineering and maintenance			Electronics, power systems, automatic control, computers (21.3%), maintenance, in EIE (8.6%)	Communication (4.8%), Foreign languages (4.3%), Projects (12%) Training period (15.6%)	Thermics, mechanics, applied mathematics and Maintenance in Mechanics, thermics, ... (33.4%)
TOTAL	TOTAL (DUT in EIE)	10768				
TOTAL DUT	TOTAL (total number of DUT)	46701				
%	%	23,06				

*: By their characteristics, these degrees are on the border of Electrical and Information Engineering.

Comment: the IUT is administratively dependent on classical universities.

Brevet de Technicien Supérieur (B.T.S.) / Superior technician degree

Specialities (French)	Specialities (English)	BTS (2000)	Number of geographical sites
<i>Electronique</i>	Electronics	1985	135
<i>Electrotechnique</i>	Power systems	3164	186
<i>Domotique</i>	Domotics	239	15
<i>Génie optique option photonique</i>	Optical engineering	133	9
<i>Contrôle industriel et régulation automatique</i>	Industrial control and automation	542	45
<i>Informatique industrielle</i>	Industrial computing	1343	104
<i>Développeurs application</i>	Software development	1745	148
<i>Administrateur de réseaux locaux d'entreprise</i>	Administration of industrial local networks	1368	150
<i>Audiovisuel (image, son, montage, exploitation)</i>	Audiovisual (image, sound, mounting, exploitation)	561	47
<i>Communication visuelle</i>	Visual communication		44
<i>Technico-commercial (génie électrique et mécanique)</i>	Technics and business (electrical and mechanical engineering)	1218	87
TOTAL	TOTAL (BTS in EIE)	12298	
TOTAL BTS	TOTAL (total number of BTS)	94892	
%	%	12,96	

Comment: the BTS is administratively dependent on high schools ("*lycées*").

Bachelor (sec. sch. +3) level

*Licence scientifique / Scientific bachelor*⁹

Specialities (French)	Specialities (English)	Licence (1999)	Number of universities
<i>Electronique Electrotechnique Automatique (EEA)</i>	Electronics- power systems - automatic control	841	17
<i>Informatique, sciences cognitives</i>	Computers, cognition sciences	2153	21
<i>Ingénierie électrique</i>	Electrical engineering	538	16
<i>Physique et applications</i>	Physics and applications	377	15
TOTAL	TOTAL	3909	

Comment: Most students come from DEUG, some come from DUT. Normally, most students continue in "*maîtrise*" or master.

Licence professionnelle / Professional bachelor

Specialities (French)	Specialities (English)	Licence professionnelle: number of universities
<i>Informatique/Sciences et Technologies de l'Information et de la Communication/Télécoms réseaux</i>	Computers/Information and Communication Science and Engineering / Telecommunications and networks	34
<i>Electronique</i>	Electronics	6
<i>Commerce électronique</i>	e-business	5
<i>Automatique et informatique industrielle</i>	Automation and industrial computering	4

This curricula were created in 2001. Most students come from *DUT* or *BTS*, some from *Licence* 2nd year. Normally, this curriculum leads to industry. In 2001, there were **1100** students in these "*licences professionnelles*" (4400 students for all the "*licences professionnelles*").

Master level

The following tables were established on the basis of the data and situation in 2000, including only the second year of the present master and making a difference between the specialities (professional or research oriented).

The more recent data are today only globalized.

⁹ Some universities (Bordeaux, Perpignan...) offered in 2001 Bologna-conformed three-year bachelor degrees. All the French Universities had followed after when renewing the four year contract with Ministry.

Former *Diplôme d'Etudes Approfondies (DEA)* Degree of Endeepen studies

Specialities (French)	Specialities (English)	DEA	Number of universities
<i>Automatique, informatique industrielle, énergie électrique</i>	Automation, industrial computing, electrical energy	353	12
<i>Electronique, traitement du signal</i>	Electronics, signal processing	781	17
<i>Informatique</i>	Computer	621	16
<i>Télécommunications, réseaux, télédétection</i>	Telecommunication, networks, teledetection	124	5
<i>Systèmes d'information, communication</i>	Information and communication systems	361	10
TOTAL	TOTAL DEA in EIE)	2240	

Comment: this degree allows the student to follow with a Ph.D.

DEA was a one-year degree.

N.B.: In 2008, all the universities in France propose research-oriented master courses in Electrical and Information Engineering.

Former *Diplôme d'Etudes Supérieures Spécialisées (DESS)* Degree of superior specialised studies

Specialities (French)	Specialities (English)	DESS	Number of universities
<i>Automatique, électronique de puissance, informatique industrielle</i>	Automation, power systems, industrial computing	521	13
<i>Electronique, traitement du signal</i>	Electronics, signal processing	494	14
<i>Informatique</i>	Computer	1843	21
<i>Mathématiques appliquées, modélisation</i>	Applied mathematics, modelling	504	
<i>Télécommunications, réseaux</i>	Telecommunication, networks	159	5
<i>Systèmes d'information, communication</i>	Information and communication systems	945	15
TOTAL	TOTAL (DESS in EIE)	4466	
TOTAL	TOTAL (total number of DESS)	28885	
%	%	15,46	

DESS was a one-year degree.

N.B.: In 2008, all the universities in France propose professionally-oriented master courses in Electrical and Information Engineering.

***Diplôme d'ingénieur* / Engineer degree**

	Where the students come from?			
	<i>CPGE</i> ¹	<i>DEUG</i> (university), <i>CPGE, DUT</i> ¹	<i>Baccalauréat</i> ²	TOTAL

Specialised school or department (in EIE)	3506	1637	2319	7462
Schools or departments with options (in EIE)	1645	36	530	2211
TOTAL	5151	1673	2849	9673

Comments:

1: classical graduate schools of engineering, a three-year curriculum after two years of fundamental studies spent in *CPGE (Classe préparatoire aux grandes écoles /* preparatory class for engineering schools), or sometimes in classical universities (formerly *DEUG Diplôme d'Etudes Universitaires Général /* General degree of academic studies and now: after the two second years of the bachelor's degree) or *DUT (Diplôme Universitaire de Technologie /* Academic degree of technology).

2: integrated graduate schools of engineering, a five-year integrated curriculum after the *Baccalauréat*.

Other comments: in France, the title of "*ingénieur*" is given by the "*Ecoles d'ingénieurs*". These schools have a specific agreement with the "*Commission des Titres de l'Ingénieur C.T.I.*" / Commission for the title of engineer. Some "*Ecoles d'ingénieurs*" depend on universities, others are independent and are considered as universities (ability to deliver the doctorate degree).

Other degree at the master level

Other degrees exist at the master level, in Electrical and Information Engineering but are marginal.

French name	English translation	Number of degrees given in 1999
<i>Diplôme de Recherche Technologique (DRT)</i>	Degree of technological research	97
<i>Magistère</i>	"Magistère"	154
<i>Mastère spécialisé</i>	Specialised "master"	1236
Other private schools (non -recognised engineers)		700

Globalized results in 2007 at master level

This new presentation takes into account the last year of the former second cycle (*maîtrise*) and a compilation of the both former *DESS* and *DEA* that correspond today to the second year of the master. Do not forget that, in parallel, graduate school of engineering deliver the master degree associated to the Engineer diploma.

	Master	Doctorate	Total
Fundamental sciences and applications	66180	15593	165377
TOTAL of students (all fields)	452886	68238	1399177

8.4. References

The information given in this monograph is based on the following documents and web links:

- Repères et références statistiques sur les enseignements, la formation et recherche - édition 2007,
<http://www.education.gouv.fr/pid316/reperes-references-statistiques.html>
- Diplômes délivrés dans les spécialités Electrotechnique, Electronique, Automatique; Communication et Informatique, bacc+2 à bacc +5, années de référence 1999 et 2000, CEFI, FIEEC,
- Website of French Ministry:
<http://www.education.gouv.fr/cid5498/les-etudiants.html>
- Website of CEFI : <http://www.cefi.fr>
- Repères et références statistiques - édition 2001



8.5. Doctoral Studies in France

8.5.1. Supervision

Scientific Board or Supervisor

Subject assigned at the beginning of the doctoral studies, by agreement between student and supervisor. In some cases it could be an imposed subject. The supervisor must be attached to a research laboratory accredited by the Ministry of Higher Education. The director of the attached laboratory must validate the subject.

Subject Assignment

Subject assigned at the beginning of the doctoral studies, by agreement between student and supervisor. In some cases it could be an imposed subject.

Who can be a Supervisor

1. Any professor/lecturer in the department, with the "Habilitation à Diriger les Recherches or HdR" degree.
2. Any internal or external researchers but one of the supervisors should be a Full Professor or Associate Professor with HdR degree, or researcher from the CNRS (National Centre for Research) with HdR degree.
3. The supervisors are validated by the doctoral school and recorded in a list of supervisors.

Tasks of Scientific Board/Supervisor

- | | | |
|----|------------------------------------|-----|
| 1. | General management | YES |
| 2. | Deciding/advising layout of course | NO |
| 3. | Assigning a thesis subject | NO |

Duration

Three to four years. The average duration is about 3.5 years.

8.5.2. Development

Courseware?

Yes.

Course Work

1. In almost all the institutions accredited to deliver the doctorate diploma by the Ministry of Higher Education (Universities, Engineer Schools), the students have to take course work during their doctoral degree preparation. The total hours range between 50 hours and 150 hours for the duration of the doctorate; the effective amount is defined by the doctoral school.
2. The course work is not assessed by examinations. There are three types of courses: specialist courses, general education courses (languages, communications, etc...) and professional courses (patents, intellectual property, transfer towards industry, structure of companies, and contacts with industry).
3. Credit system: the course work is not usually described by a credit system. However, some doctoral schools define credits instead of number of hours.
4. Monitoring: no official monitoring of the doctoral student. However, some doctoral schools organize some milestones during the thesis work, for example, an intermediate defense by the student at midway.

Contribution to Teaching

1. This contribution is not mandatory. However, the future doctors who plan to apply to higher education positions must have a teaching experience.
2. For these doctoral students, they may supervise undergraduate laboratory works, depending on the courses. The registration institution of the student must manage this activity.
3. Some student may teach undergraduate course, depending on the courses.

Presentation of Work

1. In the department.
2. At national conferences.
3. At international conferences with published proceedings (this point should be achieved before the defense of the doctorate or PhD).
4. A publication in journal is not mandatory but is strongly requested.

8.5.3. Thesis Work

Submission of Doctoral Written Thesis

1. Language: French. In some cases it is possible to use alternative languages (international juries, bi-national thesis). In this case, an extended abstract in French is asked and mainly mandatory.
2. No credits allocated to the doctoral thesis.
3. The doctoral thesis is a previously unpublished substantial written report. Some theses are published, but it is actually exceptional in the field of electrical engineering.

Oral Presentation of Thesis Work

1. Language normally used: French. In some cases it is possible to use alternative languages (international juries, bi-national thesis, co-tutorial supervision).
2. Oral presentation for an open audience with oral examination at open doors (unless there is a confidentiality issue of some works, for which a specific authorization is required).
3. Duration: typical duration of 1h45 to 2 hours with no formal upper time limit.

8.5.4. Examination

Thesis Examination Board

1. Composition: two internal examiners, three to four external examiners among whom two "rapporteurs or reviewers" who should comment in detail the content of the thesis. These external reviewers are external to the institution and to the doctoral school. The jury contains a minimum of 3 professors or equivalent function ("Research directors" attached to research organisms).
2. Selection by the supervisor and then assessed by the Scientific Board of the "École Doctorale" (Doctoral school or department for Doctoral Studies).
3. The composition of the jury must be validated by the director of the doctoral school and the president or director of the institution (University, Engineer school, etc.).

Evaluation

1. Result based on the reading of the thesis and the oral presentation of the thesis work, with no grading system for the doctoral degree. There was a grading system in the past but it has been suppressed.
2. If the student fails, he/she may resubmit a revised thesis (only the manuscript) but he/she may not do further work if the authorization of presentation of the thesis has been given by the reviewer or "rapporteur" in the pre-evaluation of the written document. If the thesis is to be re-submitted there is no time limit specification because this situation is very rare.

8.6. Questionnaires

France

3 – ACTIVITIES DURING DOCTORAL STUDIES

3.1- SUPERVISION OF DOCTORAL STUDIES

3.1.1	Are the doctoral studies supervised by a Scientific Board/supervisor? If no, please proceed to 3.1.5.	YES
3.1.2	How many members are in the Scientific Board?	30 to 40
	For example 30 to 40 for Automatic Control and Signal Processing in Nancy (common for Université Henri Poincaré Nancy 1 and Institut National Polytechnique de Lorraine).	
3.1.3	How are the members of the Scientific Board chosen?	
3.1.3.1	Elected by the Faculty, Department?	N
3.1.3.2	Chosen by the student?	N
3.1.3.3	Chosen in another way? Please specify:	Y
	Professors, Associate professors with HdR degree, some other co-opted associate professors.	
3.1.4	Which are the main tasks of the Scientific Board/ Supervisor?	
3.1.4.1	General management of the doctoral studies.	Y
3.1.4.2	Deciding the layout of the course, advising the students on their coursework.	N
3.1.4.4	Assigning the thesis subject.	N
3.1.4.5	Other. Please specify: suggest publication in journals and conferences	
3.1.5	Does the student need a personal supervisor during her/his studies?	Y
3.1.5.1	Does the same person supervise her/his thesis work?	Y
3.1.6	Must the subject of the doctoral thesis be an active research area in the department?	Y

3.1- SUPERVISION OF DOCTORAL STUDIES

3.1.7 The doctoral thesis subject is normally assigned:

- 3.1.7.1 At the beginning of the doctoral studies? Y
- 3.1.7.2 After a specified period of coursework? N
- 3.1.7.3 Other. Please specify: Y/N

3.1.8 The thesis supervisor of a doctoral student can be:

- 3.1.8.1 Any professor or lecturer in the department? Y
- 3.1.8.2 Any researcher in the department? Y
- 3.1.8.2.1 In this case, is there a need for a second supervisor who is a professor or lecturer in the department?
- 3.1.8.3 Any researcher in another institution? Y/N
- 3.1.8.3.1 In the latter case, is there a need for an internal supervisor? Y/N
- 3.1.8.4 Other methods. Please specify: Y

One of the supervisors should be a Full Professor or Associate Professor with HdR degree (Habilitation), or a Researcher with HdR degree from Research organisms such as CNRS (National Centre for Research), INSERM (Medical and Health research organism), INRIA (Computer science research organism)

3.1.9 The thesis subject is assigned by:

- 3.1.9.1 Agreement between the student and the proposed supervisor? Y
- 3.1.9.2 Other methods. Please specify: Y/N

3.2- COURSE WORK

3.2.1 Do the students have to take coursework during their doctoral degree preparation? If no, please proceed to 3.3. Y

3.2.2 **Extension and assessment.**

3.2.2.1 What is the number of contact hours spent in coursework in each year?

Year 1	Year 2	Year 3	Year 4
20 to 50 hrs	20 to 50 hrs	10 to 50 hrs	0 hrs

3.2- COURSE WORK

3.2.2.2 In which form is this coursework offered?

- As specialist graduate course units.
- As course units taken from the undergraduate programme.
- Other. Please specify.

Y

Several specialist graduate courses, general and professional courses (English for Science, intellectual properties, Meetings with industrials).
These courses are usually organized by the doctoral school.

3.2.2.3 Is the coursework assessed by examinations? If not, please give details:

N

3.2.3 Credit system**3.2.3.1 Is the coursework in your institution described by a credit system?**

N

3.2.3.2 Is it the ECTS system?

Y/N

If not, what is the relationship with ECTS? The eventual credits are not devoted for exchange. There are not ECTS.

3.2.3.3 How many credits are allocated to coursework? There is no rule. However there is a minimum of hours or equivalent credits.

___ credits

3.2.4 Monitoring**3.2.4.1 Do you monitor the performance of the doctoral student taking coursework?**

N

3.2.4.2 What regulations apply in case of failure in one or more course units?

- Retake the exam.
- Take a different course unit.

3.3- PRESENTATION OF WORK RESULTS:

3.3.1 In the department.

Y

3.3.2 At national conferences.

Y

3.3.3 At international conferences.Y¹

¹This point should be achieved before the PhD can be passed.

3.4- CONTRIBUTION TO TEACHING:

3.4.1 Supervision of undergraduate laboratory.Y²**3.4.2 Teaching undergraduate courses.**Y²

²It depends but generally Y.

4 - AWARDING OF DOCTORAL DEGREE

4.1- SUBMISSION OF DOCTORAL THESIS

4.1.1	Which language is normally used for the thesis?	French
4.1.2	Are alternative languages used for the thesis? Please Specify:	Y
	It could be in some specific cases (international juries, bi-national theses). In this case, an extended abstract in French is mandatory.	
4.1.3	Which language is normally used for the oral presentation and/or examination?	French
4.1.4	Are alternative languages used in the oral presentation and examination? Please Specify:	YES
	It could be in some specific cases (international juries, bi-national theses). In this case, an extended abstract in French is mandatory.	
4.1.5	Are credits allocated to the doctoral thesis?	N
4.1.6	The doctoral thesis is:	
4.1.6.1	A previously unpublished substantial written report.	Y
4.1.6.2	A collection of individual or co-authored scientific papers with an introduction and/or commentary. The thesis may be a synthetic presentation of already published works on the global subject. In this case, the student must give evidence of its personal invest in the results.	N
4.1.6.3	Other. Please specify:	

4.2- THESIS EXAMINATION AND DEGREE AWARDING

4.2.1	Is there an oral presentation of the thesis work for an open audience as part of the evaluation procedure?	YES
4.2.2	Composition of the thesis examination board. Please, give the typical number of:	
4.2.2.1	Internal examiners.	2
4.2.2.2	External examiners.	3-4*
4.2.2.3	TOTAL.	6

*3 to 4 among whom two reviewers or "rapporteurs" who should comment deeply on the content of the thesis. They write a report that must conclude by the acceptance of the defence.

4.2- THESIS EXAMINATION AND DEGREE AWARDING

4.2.3 How is the examination board chosen?

- | | | |
|---------|---|----------------|
| 4.2.3.1 | By the supervisor. | Y ³ |
| 4.2.3.2 | By the scientific committee of the institution. In fact the doctoral school director must validate the proposed jury that must be in agreement with the ministry rules. | N |
| 4.2.3.3 | By the rector or equivalent. The Director or President of the Institution must validate the proposed jury after acceptance of the Director of the doctoral school. | Y |
| 4.2.3.4 | By the national ministry. | N |
| 4.2.3.5 | Other. Please specify: | |

³(4.2.3.1) Proposition and then assessed by the Scientific Board of the "Ecole Doctorale" (Department for Doctoral Studies).

4.2.4 Do the examiners base their evaluation mark on:

- | | | |
|---------|---|-----------------|
| 4.2.4.1 | Reading the thesis. | Y |
| 4.2.4.2 | The oral presentation of the thesis work. | Y |
| 4.2.4.3 | Both. | |
| 4.2.4.4 | What is the typical duration of the oral part of the thesis examination, if applicable? | 1h45 to 2 hours |
| 4.2.4.5 | Is there an upper limit to the duration of the thesis examination? | N ⁴ |

⁴ **Not formally, but there is a "tradition".**

4.2.5 Is the oral part of the examination taken behind closed doors?

N

Normally not, sometimes YES due to the confidentiality of some works (need specific authorization and correspond to patent in progress with an industrial partner). We call it "a huis-clos".

4.2- THESIS EXAMINATION AND DEGREE AWARDING

4.2.6 What happens if the student fails?

4.2.6.1 May not resubmit for doctorate. Y/N

4.2.6.2 May resubmit revised thesis. Y

4.2.6.3 May do further work as specified by examination board. N⁵

4.2.6.4 If the thesis is to be re-submitted is there a time limit for this to occur?
Please specify: N⁶

⁵ If the authorization of presentation of the thesis has been given by the reviewers
ou "rapporteurs" (pre-evaluation, on the written document).

⁶ This is very, very rare.

4.2.7 Is there a grading system for the doctoral degree based on the quality of the
work? N

There was one in the past, but it has now been suppressed.

FR: France

REGION	University	http address
ALSACE	Université de Mulhouse (Université de Haute-Alsace)	http://www.univ-mulhouse.fr/
	Université Louis Pasteur Strasbourg 1	http://www-ulp.u-strasbg.fr/
AQUITAINE	Université de Bordeaux 1	http://www.u-bordeaux1.fr/
	Université de Pau et des Pays de l'Adour (UPPA)	http://www.univ-pau.fr
AUVERGNE	Université Blaise Pascal, Clermont II	http://www.univ-bpclermont.fr
BOURGOGNE	Université de Bourgogne, Dijon	http://www.u-bourgogne.fr
BRETAGNE	UBO, Université de Bretagne Occidentale, Brest	http://www.univ-brest.fr
	UBS, Université de Bretagne Sud, Lorient, Vannes	http://www.univ-ubs.fr
	Université Rennes I	http://eea.univ-rennes1.fr
CENTRE	Université d'Orléans	http://www.univ-orleans.fr
	Université de Tours François Rabelais	http://www.univ-tours.fr/
CHAMPAGNE-ARDENNE	Université de Reims Champagne-Ardenne	http://www.univ-reims.fr
	Université de Technologie de Troyes (UTT)	http://www.utt.fr/
CORSE	Université Pasquale Paoli, Corse	http://www.univ-corse.fr
FRANCHE-COMTE	Université de Franche-Comté	http://www.univ-fcomte.fr/
	Université de Technologie de Belfort-Montbéliard (UTBM)	http://www.utbm.fr/
ILE DE FRANCE	Université René Descartes (Paris V)	http://www.univ-paris5.fr
	Université Pierre-et-Marie-Curie (Paris VI)	http://www.adm.admp6.jussieu.fr
	Université Denis-Diderot (Paris VII)	http://www.sigu7.jussieu.fr
	Université Paris X-Nanterre-la Défense	http://www.u-paris10.fr
	Université Paris-Sud (Paris XI)	http://www.eea.u-psud.fr
	Université Paris XII – Val de Marne	http://www.univ-paris12.fr
	Université Paris XIII	http://www.univ-paris13.fr
	Université de Cergy-Pontoise	http://www.u-cergy.fr
	Université de Versailles Saint Quentin en Yvelines	http://www.uvsq.fr
	Université de Marne-la-Vallée	http://www.univ-mlv.fr/
	Université d'Evry Val d'Essonne	http://www.univ-evry.fr
LANGUEDOC-ROUSSILLON	Université Montpellier 2	http://www.univ-montp2.fr
	Université de Perpignan	http://www.univ-perp.fr
LIMOUSIN	Université de Limoges	http://www.unilim.fr

REGION	University	http address
LORRAINE	Université de Metz	http://www.scifa.univ-metz.fr/
	Université Henri Poincaré, Nancy 1	http://www.uhp-nancy.fr
	Institut National Polytechnique de Lorraine (INPL)	http://www.inpl-nancy.fr/
MIDI-PYRENEES	Université Paul Sabatier (Toulouse 3)	http://www.eea.ups-tlse.fr
	Institut National Polytechnique de Toulouse	http://www.inp-toulouse.fr/
	INSA-Toulouse - Institut National des Sciences Appliquées de Toulouse	http://www.insa-tlse.fr/
NORD PAS DE CALAIS	Université d'Artois,	http://www.univ-artois.fr/
	Université du Littoral Côte d'Opale à Calais et Boulogne	http://www.univ-littoral.fr/
	USTL : Université des Sciences et Technologies de Lille I (Flandres-Artois)	http://ustl.univ-lille1.fr/
	Université de Valenciennes et du Hainaut-Cambrésis (UVHC)	http://www.univ-valenciennes.fr/
BASSE-NORMANDIE	Université de Caen Basse- Normandie	http://www.unicaen.fr/
HAUTE-NORMANDIE	Université du Havre	http://www.univ-lehavre.fr/
	Université de Rouen	http://www.univ-rouen.fr/
	INSA-Rouen - Institut national des sciences appliquées de Rouen;Mont-Saint Aignant	http://www.insa-rouen.fr/
PAYS DE LA LOIRE	Université d'Angers	http://www.univ-angers.fr
	Université du Maine, Le Mans	http://www.univ-lemans.fr
	Université de Nantes	http://www.sciences.univ-nantes.fr/
PICARDIE	Université de Picardie - Jules Verne	http://www.u-picardie.fr/
	UTC - Université de Technologie de Compiègne	http://www.utc.fr/
POITOU-CHARENTE	Université de La Rochelle	http://www.univ-lr.fr/
	Université de Poitiers	http://www.univ-poitiers.fr
PROVENCE-ALPES-COTE D'AZUR	Université de la Méditerranée, Aix-Marseille-II	http://www.mediterranee.univ-mrs.fr/
	Université d'Avignon et des Pays du Vaucluse	http://www.univ-avignon.fr/
	Université d'Aix- Marseille 3	http://www.univ.u-3mrs.fr/
	UNSA : Université de Nice Sophia-Antipolis	http://www.unice.fr/fiches-ens/
	Université de Toulon et du Var	http://www.univ-tln.fr
RHONE-ALPES	Université de Savoie à Annecy	http://www.univ-savoie.fr
	Université Joseph Fourier; Grenoble 1	http://www.ujf-grenoble.fr/
	Université Claude Bernard (Lyon I)	http://www.univ-lyon1.fr/
	Université Jean Monnet de Saint-Etienne	http://www.univ-st-etienne.fr/monnet/univie4.html
	Université Pierre Mendès- France Grenoble II	http://www.upmf-grenoble.fr/upmf/
	INPG: Institut National Polytechnique de Grenoble	http://www.inpg.fr/

FR: France

	INSA l'Institut National des Sciences Appliquées	http://www.insa-lyon.fr/
Overseas dependencies	Université Antilles-Guyane	http://www.univ-ag.fr/
	Université de La Réunion	http://www.univ-reunion.fr/
	Université française du Pacifique	