

20. PT: Portugal

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20.1. General information



In Portugal there are Universities and Polytechnic Institutes. The students arrive at the University/Polytechnic after 12 years at the secondary school. As the course/school has “*numerus clausus*”, at the end of the secondary school the students have a National Exam to choose the course they want. The students are admitted or not taking into account the the global results which are constituted by the marks obtained in the secondary school, the national exams and the marks obtained in specific subjects.

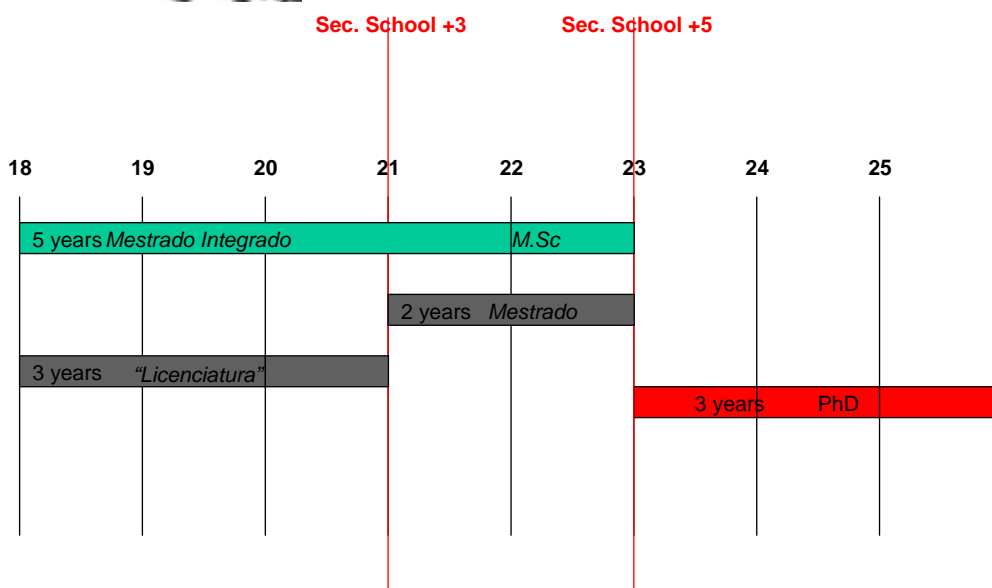


Figure 19.1: Portuguese Higher Education System in EIE disciplines.

In Portuguese Universities there are two kinds of courses: “*Licenciatura*” (*Bachelor*), with a duration of 3 years and “*Mestrado Integrado*” (*Integrated Master of Sciences*) which last 5 years. The students with a “*Licenciatura*” degree can continue at a post-graduate level for two more years for the degree of “*Mestrado*” (*Master of Science*). The “*Licenciatura*” combines a wide education in technological aspects of Electrical Engineering with a deep knowledge in mathematics and physics.

At the Polytechnic, undergraduate studies in Electrical Engineering take three years leading to the “*Licenciatura*” (1st cycle) and continue for 2 more years (2nd cycle) for the degree of “*Mestrado*”. The

first cycle of the course at the Polytechnic has mathematics and physics as well as technological subjects to prepare the students to get a job. At the second cycle at the Polytechnic the students complete their education in mathematics and physics so as their technological subjects. Most of the students that study at the second cycle can get a job, so they work and study simultaneously. After the students have finished the “*Licenciatura*” they can apply for a “*Mestrado*” course either at a University or at a Polytechnic.

20.1.1 *Electrical and Information Engineering in Portugal, boundaries of the field of study*

- Electrical Engineering
- Electronics/Microelectronic
- Telecommunications/Communications Technology
- Power Systems
- Automation/Control and Robotics
- Computer Networks
- Computer Science

20.1.2 *Content, degrees and accreditations*

The curriculum for each course is defined by a scientific committee at each University/Polytechnic.

20.1.3 *Implementation of the Bologna-BMD system in Portugal*

The Bologna structure is implemented since the academic year 2007/08

20.2. Location of the Universities and Polytechnics offering Electrical and Information (EIE) engineering courses in Portugal

The figure below shows the location of the Universities and Polytechnics offering Electrical and Information (EIE) engineering courses in Portugal.

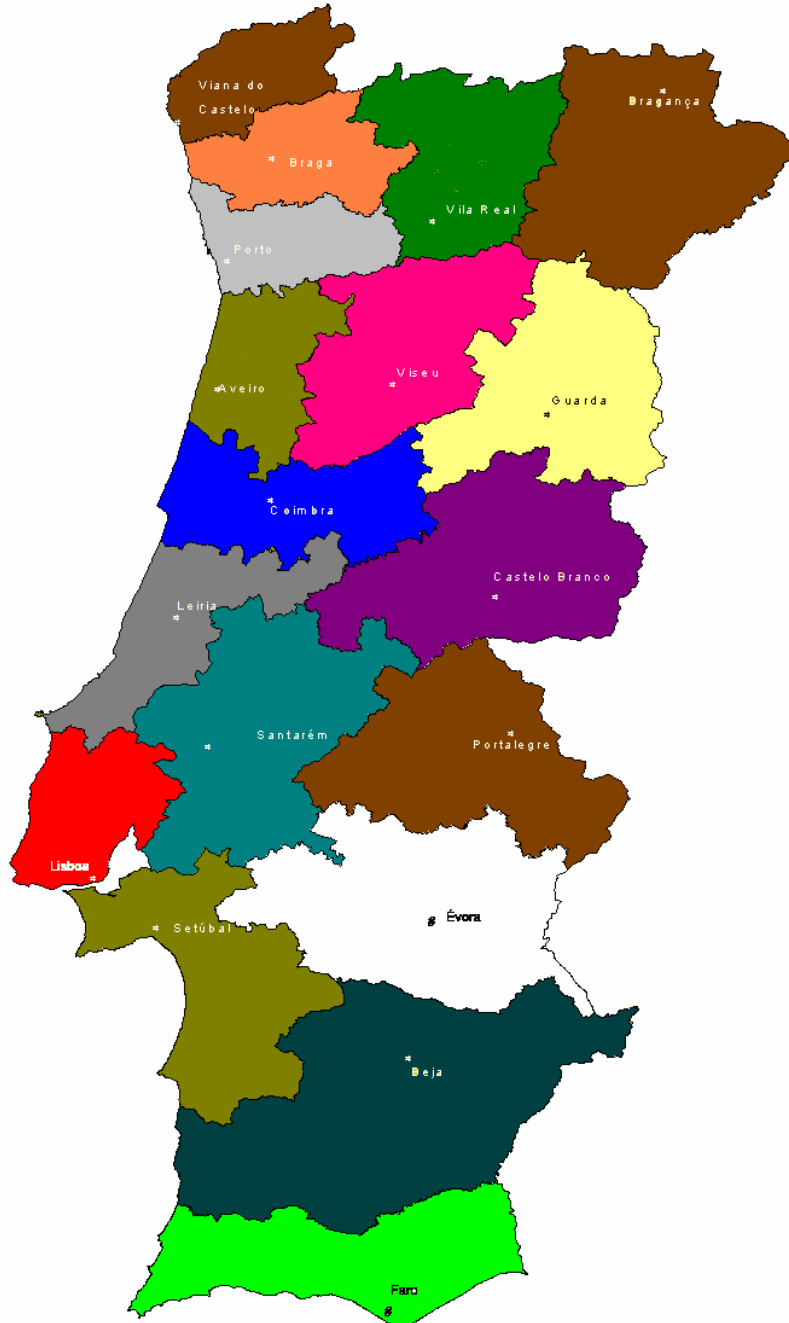


Figure 19.2: Location of the Universities and Polytechnics offering Electrical and Information (EIE) Engineering courses in Portugal.

20.3. Degrees in EIE in Portugal

20.3.1 Before “Licenciatura” (Bachelor)- technician level

After nine years at the secondary school the students can choose to go for a technical course with the duration of three years. After these three years the student can get a job or if he/she prefers he can choose to go to the University or to a Polytechnic School. There are some different courses in the EIE area.

20.3.2 “Licenciatura” (Bachelor level)

“Licenciatura” (Secondary School + 3 years) is a title that is given by the Universities or the Polytechnics, for a course program of nominally three years.

20.3.3 “Mestrado” level (Master))

“Mestrado” (5 years) is a title that is given by the University or the Polytechnics, for a course program of nominally five years or a title that is given by for a course program of nominally two years after a “Licenciatura”.

“Engenheiro (engineer)” is a title awarded by a specific professional board (“Ordem dos Engenheiros”) that recognizes the “Mestrado” at a national level, as a professional one.

20.3.4 “Doutoramento” (Ph. D)

“Doutoramento (Ph.D.)” is a title that is given by the University, after the “Mestrado” and a post-graduate course with a minimum duration of three years with a public discussion of a thesis.

20.4. References

The information given in this monograph is based on the following document:

[1] – “Ministério da Ciência e da Tecnologia” <http://www.mces.pt/>

[2] – “Ordem dos Engenheiros” <http://www.ordeng.pt/>

[3] – European Qualifications Framework

http://ec.europa.eu/education/policies/educ/eqf/index_en.html

[4] – Dublin descriptors,

www.upc.edu/ees/contingut/arxius/Descriptors_dublin%255B1%255D_2004.pdf



20.5. Doctoral Studies in Portugal

20.5.1. Supervision

Scientific Board or Supervisor

The Scientific board is composed by three members appointed by the Department or Faculty. The student, in most cases, has the same personal supervisor during its thesis work on an active research area of the supervisor.

Subject Assignment

Subject assigned at the beginning of the doctoral studies, by agreement between student and supervisor.

Who can be a Supervisor

Any professor in the department.

Tasks of Scientific Board/Supervisor

- | | | |
|----|--|------------|
| 1. | General management/monitoring | YES |
| 2. | Deciding/advising layout of course | YES |
| 3. | Assigning a thesis subject | YES |
| 4. | Responsible for monitoring student's progress. | YES |

Duration

Three years.

20.5.2. Development

Courseware?

YES.

Course Work

1. The students have to take course work during their doctoral degree preparation.
2. Extension: **1 year**.
3. Credit system: **60 ECTS**.
4. Monitoring: **YES**.

Contribution to Teaching

1. Optional supervision of undergraduate laboratory work (typically. 4/6 hours per week).
2. In general, no teaching of undergraduate courses.

Presentation of Work

In the department.

In national and international conferences

In national and international journals

20.5.3. Thesis Work

Submission of Doctoral Written Thesis

1. Language normally used: English. Alternative language: Portuguese
2. Credits allocated to the doctoral thesis- 120
3. The doctoral thesis is a previously unpublished, as a whole, substantial written report with an innovative contribution.

Oral Presentation of Thesis Work

1. Language normally used: English. Alternative language: Portuguese.
2. Oral presentation with oral examination for an open/public audience.
3. Duration: typical duration of 2 hours with an upper time limit of 3 hours. Public presentation of the thesis by the candidate during half an hour and a cross examination period that can last up to 2.5 hours.

20.5.4. Examination

Thesis Examination Board

1. Composition: four internal examiners and two external examiners (six members).
2. Selection by the supervisor and approved by the Scientific Board of the institution and the Rector of the University.

Evaluation

1. Composition: four internal examiners and two external examiners (six members).
2. Selection by the examination board..

20.6. Questionnaires

Portugal

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?	± 6
3.1.3	How are the members of the Scientific Board chosen?	
3.1.3.1	Elected by the Faculty, Department?	YES
3.1.3.2	Chosen by the student?	NO
3.1.3.3	Chosen in another way? Please specify:	NA
3.1.4	Which are the main tasks of the Scientific Board/ Supervisor?	
3.1.4.1	General management of the doctoral studies.	YES
3.1.4.2	Deciding the layout of the course, advising the students on their coursework.	YES
3.1.4.4	Assigning the thesis subject.	YES
3.1.4.5	Other. Please specify:	
3.1.5	Does the student need a personal supervisor during her/his studies?	YES
3.1.5.1	Does the same person supervise her/his thesis work?	YES
3.1.6	Must the subject of the doctoral thesis be an active research area in the department?	YES

3.1.7

3.1.7.1 At the beginning of the doctoral studies?

3.1.7.2 After a specified period of coursework?

3.1.7.3 Other. Please specify:

3.1.8

3.1.8.1 Any professor or lecturer in the department?

3.1.8.2 Any researcher in the department?

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?

3.1.8.3.1 In the latter case, is there a need for an internal supervisor?

3.1.8.4 Other methods. Please specify:

3.1.9

3.1.9.1 Agreement between the student and the proposed supervisor?

3.1.9.2 Other methods. Please specify:

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

3.2.2

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

Year 1	Year 2	Year 3
12 h/week	0 hrs	0 hrs

3.2- COURSE WORK

3.2.2.2 In which form is this coursework offered?

- As specialist graduate course units. YES
- As course units taken from the undergraduate programme. NO
- Other. Please specify.

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

3.2.3 Credit system

3.2.3.1 Is the coursework in your institution described by a credit system? YES

3.2.3.2 Is it the ECTS system? YES
If not, what is the relationship with ECTS?

3.2.3.3 How many credits are allocated to coursework? 60ECTS

3.2.4 Monitoring

3.2.4.1 Do you monitor the performance of the doctoral student taking coursework? YES

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

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

3.3- PRESENTATION OF WORK RESULTS:

3.3.1 In the department. YES

3.3.2 At national conferences. YES

3.3.3 At international conferences. YES

3.4- CONTRIBUTION TO TEACHING:

3.4.1 Supervision of undergraduate laboratory. YES

3.4.2 Teaching undergraduate courses. YES/NO

4 - AWARDING OF DOCTORAL DEGREE

4.1- SUBMISSION OF DOCTORAL THESIS

4.1.1	Which language is normally used for the thesis?	English
4.1.2	Are alternative languages used for the thesis? Please Specify:	YES Portuguese
4.1.3	Which language is normally used for the oral presentation and/or examination?	English
4.1.4	Are alternative languages used in the oral presentation and examination? Please Specify:	YES Portuguese
4.1.5	Are credits allocated to the doctoral thesis?	YES
4.1.6	The doctoral thesis is:	
4.1.6.1	A previously unpublished substantial written report.	YES
4.1.6.2	A collection of individual or co-authored scientific papers with an introduction and/or commentary.	NO
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.	4
4.2.2.2	External examiners.	2
4.2.2.3	TOTAL.	6

4.2- THESIS EXAMINATION AND DEGREE AWARDING

4.2.3	How is the examination board chosen?	
4.2.3.1	By the supervisor.	YES ¹
4.2.3.2	By the scientific committee of the institution.	YES ¹
4.2.3.3	By the rector or equivalent.	YES ¹
4.2.3.4	By the national ministry.	NO
4.2.3.5	Other. Please specify:	
	¹ By the supervisor and by the scientific committee of the institution.	
4.2.4	Do the examiners base their evaluation mark on:	
4.2.4.1	Reading the thesis.	YES
4.2.4.2	The oral presentation of the thesis work.	YES
4.2.4.3	<u>Both</u> .	YES
4.2.4.4	What is the typical duration of the oral part of the thesis examination, if applicable?	2 hours
4.2.4.5	Is there an upper limit to the duration of the thesis examination?	YES
4.2.5	Is the oral part of the examination taken behind closed doors?	NO
4.2.6	What happens if the student fails?	
4.2.6.1	May not resubmit for doctorate.	NO
4.2.6.2	May resubmit revised thesis.	YES
4.2.6.3	May do further work as specified by examination board.	YES
4.2.6.4	If the thesis is to be re-submitted is there a time limit for this to occur? Please specify:	YES
4.2.7	Is there a grading system for the doctoral degree based on the quality of the work?	NO

PT: Portugal

Universities and Polytechnics with departments in Electrical Engineering or Electrical and Computer

Electrical Engineering or Electrical and Computer Departments exist in the following Universities and Polytechnics:

City	University, Faculty	http address
UNIVERSITIES		
Aveiro	Universidade de Aveiro	http://www.ua.pt/
Braga/Guimarães	Universidade do Minho	http://www.uminho.pt/
Coimbra	Universidade de Coimbra*	http://www.dee.uc.pt/
Covilhã	Universidade da Beira Interior	http://www.ubi.pt/
Funchal	Universidade da Madeira	http://saesc.uma.pt/
Lisboa	Universidade Técnica de Lisboa* Instituto Superior Técnico	http://www.dei.ist.utl.pt/
Porto	Universidade do Porto*, Faculdade de Engenharia	http://sifeup.fe.up.pt/
Vila Real	Universidade de Trás os Montes e Alto Douro	http://www.utad.pt/
POLYTECHNICS		
Bragança	Instituto Politécnico de Bragança	http://www.ipb.pt/
Coimbra	Instituto Superior de Engenharia de Coimbra**	http://sun.isec.pt/
Guarda	Instituto Politécnico da Guarda	http://www.ipg.pt/
Leiria	Instituto Politécnico de Leiria	http://www.ipleiria.pt/
Lisboa	Instituto Politécnico de Lisboa - Escola Superior de Engenharia de Lisboa**	http://www.ipl.pt/
Porto	Instituto Superior de Engenharia do Porto**	http://www.ipp.pt/
Setúbal	Instituto Politécnico de Setúbal	http://www.aci.pt.vu/
Tomar	Instituto Politécnico de Tomar	http://www.ipt.pt/
Viana do Castelo	Instituto Politécnico de Viana do Castelo	http://www.ipvc.nortenet.pt/
Viseu	Instituto Politécnico de Viseu	http://www.ipvc.nortenet.pt/

*In these three Faculties the courses are wider and the students can choose between several specializations. In the others the courses are more specialized.

**In these three Polytechnics there are different specializations that the students can choose. In the other there are only specialized courses (Informatics, Telecommunications, Electronics...)

Universities and Polytechnics without departments in Electrical Engineering or Electrical and Computer

City	University, Faculty	http address
Açores	Universidade dos Açores - Ponta Delgada	http://www.uac.pt/
Águeda	Universidade de Aveiro - Escola Superior de Tecnologia e Gestão de Águeda	http://www.ua.pt/
Beja	Instituto Politécnico de Beja - Escola Superior de Tecnologia e Gestão de Beja	http://www.ipleiria.pt/
Castelo Branco	Instituto Politécnico de Castelo Branco - Escola Superior de Tecnologia de Castelo Branco	http://www.ipcb.pt/
Covilhã	Universidade da Beira Interior	http://www.ubi.pt/
Évora	Universidade de Évora	http://www.uevora.pt/
Faro	Universidade do Algarve - Escola Superior de Tecnologia de Faro	http://www.ualg.pt/est/adee
Felgueiras	Instituto Politécnico do Porto - Escola Superior de Tecnologia e Gestão de Felgueiras	http://www.ipp.pt/
Lamego	Instituto Politécnico de Viseu - Escola Superior de Tecnologia e Gestão de Lamego	http://www.ipleiria.pt/
Lisboa	Academia Militar	http://www.exercito.pt/am/index.htm
	Universidade Nova de Lisboa - Faculdade de Ciências e Tecnologia	http://www.dee.fct.unl.pt/
	Instituto Militar dos Pupilos do Exército Secção de Ensino Superior	http://www.exercito.pt/am/index.htm
Portalegre	Instituto Politécnico de Portalegre - Escola Superior de Tecnologia e Gestão de Portalegre	http://www.ipportalegre.pt/