21. RO: Romania

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21.1. General information

Since 2005/2006 the EIE higher education system in Romania has changed.

Main changes:

1. Two cycles

- Bachelor: duration 8 semesters (4 years) for technical higher education

- Master: duration 3 or4 semesters (1.5 or 2 years, minimum 90 credits)

2. Generalization of European Credits Transfer System (ECTS)

3. Doctoral studies: with attendance (3 years) or without attendance/part-time attendance (3...5 years)

The old EIE higher education system in Romania:

- undergraduate programmes, duration 3 years or 5 years (degrees awarded: "Bachelor of Engineering" or "Diplomat Engineer" respectively)

- postgraduate programmes, duration 1…2 years or 4…6 years (degrees awarded: M.Sc., or Ph.D. respectively).

The old and the new EIE higher education system in Romania is going concomitant, but since 2005 has organized admission only for new undergraduate programme and new doctoral studies. Master degree is organized under the old rules (for 2007 and 2008).

The higher education in Romania is public and private, but private universities don't cover Electrical and Information Engineering education domain. Each year Minister of Education and Research establish a number of students which will be admitted without fee by public Romanian universities. But each university can enrol a limited number of students with fee.
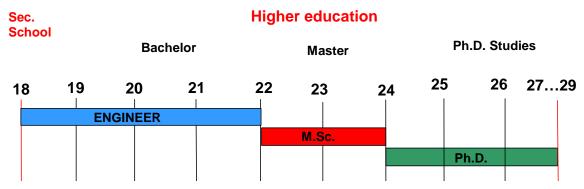

Figure 21.1: Romanian Higher Education System in EIE disciplines

21.1.1 Electrical and Information Engineering in Romania, boundaries of the field of study

In Romania there are more than 20 public universities that cover the EIE domain. Next table presents some of them.

"Transilvania" University of Brasov
"Politehnica" University of Bucharest
University of Bucharest
"Babes-Bolyai" University of Cluj-Napoca
Technical University of Cluj-Napoca
"Ovidius" University of Constanta
University of Craiova
"Gh. Asachi" Technical University of Iasi
"Alexandru Ioan Cuza" University of Iasi
University of Oradea
"Politehnica" University of Timisoara
West University of Timisoara
"Dunarea de Jos" University of Galati
Petroleum - Gas University of Ploiesti
University of Pitesti
"Lucian Blaga" University of Sibiu
University of Bacau
"Petru Maior" University of Targu-Mures
North University of Baia Mare
"Constantin Brancusi" University of Targu Jiu
"Stefan cel Mare" University of Suceava
"Aurel Vlaicu" University of Arad
"Vasile Goldis" University of Arad

Some universities are technical universities and cover all EIE domains (Bachelor, Master and Ph.D.).
Other universities cover only informatics domain (Bachelor, possible Master).
Usually, in Romania there are the following faculties that cover EIE domain:
- Faculty of Automation and Computers
- Faculty of Electrical Engineering
- Faculty of Electronics and Telecommunications Engineering

Next section will present some examples of EIE domain covered by new higher education system in some Romanian universities.

"Transilvania" University of Brasov
Faculty of Electrical Engineering and Computer Science offers undergraduate programmes (Bachelor): engineers, 4 years.
Domain: Electrical Engineering. Specializations: Electrical Engineering; Electromechanics; Electrical Engineering & Computers (in English language); Instrumentation and Data Acquisition.
Domain: Electronics and Telecommunications Engineering. Specializations: Applied Electronics; Telecommunications.
Domain: Systems Engineering. Specializations: Automation and Applied Informatics.
Postgraduate courses: M.Sc., 1-2 years. Specializations: Information & Communications Systems and Technologies; Converter - Electrical Machine Systems Control; Computer Systems for Process Control; Electronic Design Automation Techniques.
Doctoral studies: 3 - 4 years
Domains: Electrical Engineering; Computer Science; Electronic Engineering & Telecommunications; Automation; Industrial Engineering.
Faculty of Mathematics and Computer Science offers undergraduate programmes (Bachelor): 3 years for specialization Computer Science (in German language).

"Politehnica" University of Bucharest

Faculty of Electrical Engineering offers undergraduate programmes (Bachelor): engineers, 4 years.
Domain: Electrical Engineering. Specializations: Electrical Equipment; Electrical Drive Systems; Electrical Engineering; Metrology and Measuring Systems.
Faculty of Power Engineering offers undergraduate programmes (Bachelor): engineers, 4 years.
Domain: Power Engineering.
Faculty of Automatic Control and Computers offers undergraduate programmes (Bachelor): engineers, 4 years.
Domain: Systems Engineering. Specialization: Automation and Industrial Informatics.
Domain: Computer Science and IT.
Faculty of Electronics, Telecommunications and Information Technology offers undergraduate programmes (Bachelor): engineers, 4 years.
Domain: Electronics and Telecommunications Engineering. Specializations: Applied Electronics; Telecommunications; Microelectronics; Physics Engineering.

University of Bucharest

Faculty of Mathematics and Computer Science offers undergraduate programmes (Bachelor): 3 years for specialization Information Technology*.

"Babes-Bolyai" University of Cluj-Napoca

Faculty of Mathematics and Computer Science offers undergraduate programmes (Bachelor), 3 years (series 2005-2008, 2006-2009, 2007-2010), specialization Computer Science (Romanian, Hungarian, English).
Bachelor 4 years (series 2004-2008) – Domain: Computer Science (Romanian, Hungarian, English).
Master 1 year. Domain: Computer Science (series 2007-2008).
PhD Programmes in Computer Science.

"Ovidius" University of Constanta

The Faculty of Mechanical, Industrial and Maritime Engineering offers undergraduate programmes (Bachelor): engineers, 4 years.
Domain: Power Engineering. Specialization: Power Engineering.
The Faculty of Mathematics and Informatics offers undergraduate programmes (Bachelor), 3 years: Computer Science.

University of Craiova

Faculty of Mathematics and Informatics offers undergraduate programmes (Bachelor), 3 years.
Domain: Informatics. Specializations: Informatics; Applied Informatics.
Master: Artificial Intelligence.
PhD Programmes in Informatics.
Faculty of Electrical Engineering offers undergraduate programmes (Bachelor): engineers, 4 years.
Domain: Electrical Engineering. Specializations: Electrical Engineering and Computers (Romanian, French); Electrical Systems.
Domain: Power Engineering. Specializations: Power Systems Engineering; Thermoenergetics.
Domain: Engineering and Management.
Domain: Aerospace Engineering.
Master in domain of Electrical Engineering.
PhD Programmes in: Electrical Engineering, Power Engineering.
Faculty of Electromechanics, Environmental and Industrial Informatics Engineering offers undergraduate programmes (Bachelor): engineers, 4 years.
Domain: Electrical Engineering. Specializations: Electromechanics; Applied Engineering Sciences; Industrial Informatics; Environmental Engineering.
Master: Complex Electromechanical Systems.
PhD Programmes in domain of Electrical Engineering.
Faculty of Automation, Computers and Electronics offers undergraduate programmes (Bachelor): engineers, 4 years.
Domain: Systems Engineering. Specializations: Automation and Applied Informatics; Multimedia Systems Engineering.
Domain: Computers and IT. Specialization: Computer Science (Romanian and English).
Domain: Electronics and Telecommunications Engineering. Specialization: Applied Electronics.
Domain: Mechatronics and Robotics. Specialization: Robotics.

Master in domain of Systems Engineering (Automation) and Computer Science.
PhD Programmes in: Systems Engineering (Automation) and Computer Science.

"Gh. Asachi" Technical University of Iasi
Faculty of Automatic Control and Computer Engineering offers undergraduate programmes (Bachelor): engineers, 4 years.
Domain: Systems Engineering. Specialization: Automation and Applied Informatics.
Domain: Computers and IT. Specializations: Computer Science; IT.
Master in domain of Systems Engineering (Automation) and Computer Science.
PhD Programmes in Systems Engineering (Automation) and Computer Science.
Faculty of Electrical Engineering offers undergraduate programmes (Bachelor): engineers, 4 years.
Domain: Electrical Engineering. Specializations: Instrumentation and Data Acquisition; Electrical Systems.
Domain: Power Engineering. Specializations: Power Systems Engineering; Power Management; Thermoenergetics.
Domain: Engineering and Management.
Domain: Applied Engineering Sciences. Specialization: Applied Informatics for Electrical Engineering.
Master in domain of Electrical Engineering and Power Engineering.
PhD Programmes in: Electrical Engineering, Power Engineering.
Faculty of Electronics and Telecommunications Engineering offers undergraduate programmes (Bachelor): engineers, 4 years.
Domain: Electronics and Telecommunications Engineering. Specializations: Electronics; Telecommunications; Electronics Microtechnologies.
Master in domain of Electronics and Telecommunications Engineering.
PhD Programmes in Electronics and Telecommunications Engineering.

"Alexandru Ioan Cuza" University of Iasi
Faculty of Informatics offers undergraduate programmes (Bachelor), 3 years.
Specialization: Informatics.

University of Oradea
The Faculty of Electrical Engineering and Information Technology offers undergraduate programmes (Bachelor): engineers, 4 years.
Domain: Electrical Engineering. Specializations: Electromechanics; Electrical Systems.
Domain: Electronics and Telecommunications Engineering. Specializations: Applied Electronics; Software and Networks for Telecommunications Engineering.
Domain: Computers and IT. Specializations: IT; Computers.
Domain: Engineering and Management.
Domain: Applied Engineering Sciences. Specialization: Medical Engineering.
Domain: Systems Engineering. Specialization: Automation and Applied Informatics.
The Faculty of Power Engineering offers undergraduate programmes (Bachelor): engineers, 4 years.
Specializations: Power Engineering; Thermal Energy Engineering; Industrial Engineering and Management.
Faculty of Science offers undergraduate programmes (Bachelor), 3 years.
Specialization: Computer Science.
Master (4 semesters) in specialization of Information Technology and Multimedia.

"Politehnica" University of Timisoara
Faculty of Automation and Computers offers undergraduate programmes (Bachelor): engineers, 4 years.
Domains: Computers and IT, Systems Engineering, Informatics.
Faculty of Electronics and Telecommunications Engineering offers undergraduate programmes (Bachelor): engineers, 4 years.
Domain: Electronics and Telecommunications Engineering.
Master: Electronics and Telecommunications Engineering.
Faculty of Electrical Engineering offers undergraduate programmes (Bachelor): engineers, 4 years.
Domains: Electrical Engineering, Power Engineering.

West University of Timisoara
Faculty of Matehmatics and Informatics offers undergraduate programmes (Bachelor), 3 years.

Specialization: Informatics (Romanian and English).
Master: Informatics.
Ph.D. Programme: Informatics.

"Dunarea de Jos" University of Galati
Faculty of Computer Science offers undergraduate programmes (Bachelor): engineers, 4 years.
Domain: Systems Engineering. Specialization: Automation and Industrial Informatics.
Domain: Computers and IT. Specialization: Computers.
Master in domains: Systems Engineering, Computers and IT.
Ph.D. programmes for Systems Engineering and Computer Science.
Faculty of Electrical and Electronics Engineering offers undergraduate programmes (Bachelor): engineers, 4 years.
Domain: Electrical Engineering. Specialization: Electromechanics.
Domain: Electronics and Telecommunications Engineering. Specializations: Applied Electronics, Telecommunications Technologies and Systems.
Master: Electrical Engineering, Electronics and Telecommunications Engineering.
Faculty of Sciences offers undergraduate programmes (Bachelor), 3 years.
Specialization: Informatics.

Petroleum - Gas University of Ploiesti
Faculty of Mechanical and Electrical Engineering offers undergraduate programmes (Bachelor): engineers, 4 years.
Domain: Electrical Engineering. Specialization: Electromechanics.
Domain: Electronics Engineering and Telecommunications. Specialization: Applied Electronics.
Domain: System Engineering. Specialization: Automation and Applied Informatics.
Domain: Computers and Information Technology. Specialization: Computers.
Master: domain Engineering Science. Specializations: Management of Electric and Electronics Systems, Advanced Automation and Programmable Structures.
Faculty of Letters and Sciences offers undergraduate programmes (Bachelor), 3 years.
Specialization: Informatics.
Master's degree programmes: Informatics, 3 semesters.

University of Pitesti
Faculty of Electronics Communications and Computers offers undergraduate programmes (Bachelor): engineers, 4 years.
Domains: Electronics and Telecommunications Engineering, Electrical Engineering, Computers and IT.

"Lucian Blaga" University of Sibiu
"Hermann Oberth" Faculty of Engineering offers undergraduate programmes (Bachelor): engineers, 4 years.
Domains: Electrical Engineering (specialization Electromechanics), Computers and IT (specialization IT).
"Hermann Oberth" Faculty of Engineering offers undergraduate programmes (Bachelor), 3 years. Specializations: Informatics, Applied Informatics.

University of Bacau
Faculty of Engineering offers undergraduate programmes (Bachelor): engineers, 4 years.
Domains: Power Engineering, Computers and IT (specialization IT).
Faculty of Sciences offers undergraduate programmes (Bachelor), 3 years.
Specializations: Informatics.

"Petru Maior" University of Targu Mures
Faculty of Engineering offers undergraduate programmes (Bachelor): engineers, 4 years.
Domains: Power Engineering, Systems Engineering (specialization Automation and Applied Informatics).
Faculty of Sciences offers undergraduate programmes (Bachelor), 3 years.
Specializations: Informatics.

North University of Baia Mare

Faculty of Engineering offers undergraduate programmes (Bachelor): engineers, 4 years.
Domains: Electrical Engineering (specialization Electromechanics), Power Engineering, Computers and IT (specialization Computers), Electronics and Telecommunications Engineering (specialization Electronics).
Faculty of Sciences offers undergraduate programmes (Bachelor), 3 years.
Specializations: Informatics.

"Constantin Brancusi" University of Targu Jiu

Faculty of Engineering offers undergraduate programmes (Bachelor): engineers, 4 years.
Domains: Power Engineering, Systems Engineering (specialization Automation and Applied Informatics).

"Stefan cel Mare" University of Suceava

Faculty of Electrical Engineering and Computers Science offers undergraduate programmes (Bachelor): engineers, 4 years.
Domains: Power Engineering, Computers and IT (specialization Computers), Systems Engineering (specialization Automation and Applied Informatics).

"Aurel Vlaicu" University of Arad

Faculty of Engineering offers undergraduate programmes (Bachelor): engineers, 4 years.
Domains: Systems Engineering (specialization Automation and Applied Informatics), Engineering and Management.

"Vasile Goldis" University of Arad

Faculty of Informatics offers undergraduate programmes (Bachelor), 3 years.
Specializations: Informatics.

21.2. Degrees in EIE in Romania

1st and 2nd years of study in the selected domain represent the common core of the curricula for the 4 years programme. After the first two years, the student makes the choice for his direction of speciality. The next table presents an example of the common core for two domains of EIE education from two Romanian universities. For the first two years each university has a small independence in order to choose the courses. For the last two years (3rd and 4th year of study) this independence increases.

Year of study	Semester	Course Name	
		Domain: Systems Engineering Specialization: Automation and Applied Informatics	**Domain: Computers and IT**
1st	1st	Mathematical Analysis	Mathematical Analysis
1st	1st	Linear Algebra	Linear Algebra
1st	1st	Materials/Chemistry	Operating Systems
1st	1^{s}	Physics	Physics
1st	1st	Computers Programming	Computers Programming
1st	2nd	Programming Techniques	Data Structures
1st	2nd	Electrotechnics Fundamentals	Electrotechnics Fundamentals
1st	2nd	Mechanics Fundamentals	Digital System Design
1st	2nd	Special Mathematics	Special Mathematics
1st	2nd	Numerical Methods	Numerical Methods
2nd	1st	Linear Electronic Circuits	Algorithms Analysis
2nd	1st	Analysis and Design of Digital Systems	Object Oriented Programming
2nd	1st	Signals, Circuits and Systems	Systems Theory
2nd	1st	Databases	Electronics
2nd	1st	Object Oriented Programming	Computer Architecture
2nd	2nd	Digital Electronic Circuits	Algorithms Design

2nd	2nd	Electrical Actuators	Communication Protocols
2nd	2nd	Systems Theory	Digital Electronics
2nd	2nd	Robotics Fundamentals	Assembly Language Programming
2nd	2nd	Computer Architecture	Numerical Computers

21.3 EIE Education in Romania – detailed information

Since 2005/2006 the EIE higher education system in Romania has changed.
Main changes:
1. Two cycles
- Bachelor: duration 8 semesters (4 years) for technical higher education
- Master: duration 3 or4 semesters (1.5 or 2 years, minimum 90 credits)
2. Generalization of European Credits Transfer System (ECTS)
3. Doctoral studies: with attendance (3 years) or without attendance/part-time attendance (3...5 years)

The old EIE higher education system in Romania:
- undergraduate programmes, duration 3 years or 5 years (degrees awarded: "Bachelor of Engineering" or "Diplomat Engineer" respectively)
- postgraduate programmes, duration 1…2 years or 4…6 years (degrees awarded: M.Sc., or Ph.D. respectively).

The old and the new EIE higher education system in Romania is going concomitant, but since 2005 has organized admission only for new undergraduate programme and new doctoral studies. Master degree is organized under the old rules (for 2007 and 2008).

The higher education in Romania is public and private, but private universities don't cover Electrical and Information Engineering education domain. Each year Minister of Education and Research establish a number of students which will be admitted without fee by public Romanian universities. But each university can enrol a limited number of students with fee.

The Faculties from EIE domain aim the training electrical, electronic, automation, information technologies, and electromechanical engineers able to function in all sectors of economy. The EIE faculties further ensures, with few exceptions, the training in electrical engineering, electronics, automation and computers science of the students of the other, non-electrical faculties of engineering from universities.

Currently more than 30,000 students are registered for the EIE education offered by the Romanian faculties.

The teaching staff of the EIE faculties comprises more than 2000 professors, associate professors, lecturers, assistants and junior assistants, of which more than 1000 hold Ph.D. degrees.

Since the academic year 1998 the ECTS has been adopted at the Romanian Universities and till 2005 the engineering curricula for undergraduate programmes was based on the structure that consists of 2 cycles:
 1.   first cycle of 2 years (4 semesters);
 2.   second cycle of 3 years duration (6 semesters).
Since the academic year 2005 the engineering curricula for undergraduate programmes are based on the structure that consists of 2 cycles:
 1.   first cycle of 2 years (4 semesters);
 2.   second cycle of 2 years duration (4 semesters).
The program of the first cycle envisages fundamental technical education. At the EIE Faculties, the first cycle curricula are not individualized on specialization branches and consist of general engineering education courses.

Usually, taking a competitive written test in algebra and mathematical analysis, geometry, trigonometry or physics ensures entry in the first year of undergraduate studies (Bachelor). Selection

of candidates for the advanced studies programme (Master) is performed also by a written examination, while Ph.D. students are selected by an oral examination by a committee of specialists. Evaluation of acquired knowledge is based on a 1 to 10 scale (and with a number of credits) and is performed during written or oral examinations, presentation of projects, laboratory reports and homework. During the 4 years of studies, the students must pass more than 40 examinations for the compulsory and optional disciplines, and examinations for projects, practical activities, and the free chosen disciplines.

For a full academic recognition for student mobility in the framework of different programmes, a credit transfer system was introduced. In this credit transfer system, 60 credits represent the workload of an academic year of study and normally 30 credits for a semester.

Today the Faculties of Electrical Engineering offer higher education curricula in theoretical and applied Electrotechnics, mainly in the field of low frequency, low voltage, medium and high currents, including: electromagnetic field and electric circuits, electromagnetic energy conversion and sources, metrology, electrical machines and apparatus, electric drives and motion control, power electronics, CAD for electrical engineering, management in electrical industries.

The Faculties of Automation and Computers prepare graduates able to work in the following fields: the structure and the architecture of computer systems, microprocessors-based systems, system software, application software systems, artificial intelligence and expert systems (students from Computer Science specialization), and control system engineering, computer controlled processes, robots and flexible systems manufacturing, bioengineering and intelligent systems, industrial automation (students from Automation and Applied Informatics specialization). The actual curricula is the result of more than 30 years of expertise and evolution, during which it has suffered many adjustments and up-dating, closely following the progress registered in System and Computer Science. Given the quality of the courses offered by the Faculties of Automation and Computers, the diplomas obtained here are compatibles with those of the most prestigious universities from all over the world.
The Faculties of Automation (Automatic Control) and Computers offer degrees in an enormously vibrant field: "Computer Science and System Science", which has become the defining support of the Information Society and the primary engine behind much of the world's economic growth.
Students may enroll in several types of undergraduate and postgraduate programmes, the basic one being the 4 (5 for old system) years programme which leads to an Engineering Diploma in one of the two specializations: Computers or Automation and Applied Informatics, each specialization having several elective directions of studies. Besides this basic programme, the faculties also offers the advance studies programme, which consists in one or two additional years after completing the engineering diploma courses (Master degree), and a Ph.D. programme.

The Faculties of Electronics and Telecommunication Engineering offer to theirs undergraduate and graduate students a unique blend of educational advantages. Faculty members with outstanding research reputation teach both undergraduate and graduate courses in the areas of Electronics, Microelectronics, Computing Engineering and Telecommunications. In all these, the emphasis is on the vocational application of acquired knowledge. All courses are designed to meet the education and training needs of today's high technology society, and to assist in the appropriate recruitment of technology-based business and industry in Romania. Major fields of study: Applied Electronics, Telecommunications, Microelectronics, Physics Engineering, Economical Engineering for Electronics and Telecommunications.

The Power Engineering Faculties continuously shaped theirs training system, according to the needs of modern power engineering and to its environmental and economical aspects. Major fields of study: Thermal power plants; Nuclear power plants; Hydro power plants; Environment engineering; Energy use; Electric power engineering; Power process control.

Among the EIE faculty's strategic objectives are the following:
1) Development of curricula in close correlation with the market demands and with the contents and style of those of the most prestigious universities from abroad, both in Europe and the USA;
2) Maintaining an outstanding record in teaching, research and innovation, with close interaction between research activities and the educational process, to keep pace with the latest developments in

the field of electrical engineering, automatic control and information technology and to increase the faculty reputation;

3) In depth awareness of the students' social and training problems and the development of a partnership relation with the students;

4) Growing a stimulating learning environment and a collection of various resources to support classroom and individual work, research and self instruction;

5) Recruiting and promoting the best graduates as faculty teaching staff to ensure the perpetual renewal of the academic personnel;

6) Development of national and international academic and scientific cooperation.

The EIE curriculum of all specializations comprises courses, seminars, practical work sessions and semester projects, the second semester of the final year being dedicated to the development of the diploma project, too. The curriculum includes traditional and modern subjects scheduled as compulsory, optional and free categories of courses in order to ensure a solid professional education and to respond to the students' interests and employers' demands from industry and research. Cooperation with the industry and research environments is constantly ensured. Some of the taught disciplines benefit from the participation of research and industry specialists as associate professors. A large number of specialists and managers from industry, research or economic bodies are invited to debate actual or prospective problems with the students and the teaching staff, and are consulted for syllabi development. There are also long distance education centres for the EIE education.

The EIE faculties offer Ph.D. programmes leading to a doctoral degree in the fields of EIE.
Ph.D. student programmes consist of:

1. Advanced University Study Programme – includes both advanced knowledge disciplines within the doctoral study domain and complementary training disciplines. Disciplines are modules structured.
2. Scientific research project – the finality of the Advanced University Study Programme. Project theme is established by agreement between the Ph.D. student and the supervisor and it is correlated with Advanced University Study Programme, with the competence area of the supervisor and with research project promoted by the institution. Project theme is approved by the Scientific Committee of the Doctoral School.
3. Scientific Research Programme – is organized in the competence area of the supervisor.
4. Intermediary results of the Scientific Research Programme are presented by the Ph.D. student as scientific reports.

Besides the dedicated professional training, the students of Romanian EIE faculties have the opportunity to fully express their personality. Thus, they have the opportunity to participate in national and international professional contests of computer programming, mathematics, electronics, electrotechnics, etc, a significant number of our students having obtained outstanding results.

We must also mention the activities initiated by the students professional association (for example BEST), the purpose of which is to establish connections with young people from abroad through summer schools and workshops, as well as the accomplishment of a more active student involvement in the professional life.

The laboratories are all connected to Internet through LAN and RoEduNet. The faculties also have libraries providing books, technical reviews and all kind of other documentation in the field of EIE. The students have also access to the others libraries, as well.

The students completing one of EIE programmes can find a job in competitive industrial and economic environments; many are employed by multi-national companies or work abroad and are highly valued for their knowledge. More than 300 EIE graduates were or are currently enrolled in Ph.D. programmes in universities from the USA and other western countries. Every year a number of students are called upon to prepare their diploma projects by the universities from abroad which Romanian faculties have cooperation agreements.

21.4. References

http://www.edu.ro/ -- site of Education and Science Ministry in Romania

Doctoral
Studies

21.5. Doctoral Studies in Romania

21.5.1. Supervision

Scientific Board or Supervisor

The <u>Scientific board</u> is composed by approximately twenty members. The members of the Scientific Board are proposed by Scientific Committee of University and the Scientific Board is approved by the Senate of University. The student, <u>in most cases,</u> has the same personal supervisor during its thesis work on an <u>active</u> research area of the supervisor.

Subject Assignment

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

Who can be a Supervisor

Any professor or researcher of the Doctoral School who received attestation from National Council for Attestation of Academic Titles, Diplomas and Certificates.

Tasks of Scientific Board/Supervisor

1.   General management   YES

2.   Deciding/advising layout of course   YES

3.   Assigning a thesis subject   YES

Duration

Three to four years.

21.5.2. **Development**

Courseware?

Yes.

Course Work

1. The students have to take course work during their doctoral degree preparation and offered as specialist graduate course units. The course work is assessed by examinations. If the student fails in the course work, he/she must retake the exam.

2. Extension: 240 hours on the first year and 120 hours in the second year.

3. Credit system: ECTS - 60 credits are allocated to course work.

4. The course work of the doctoral student is monitored.

Contribution to Teaching

Within doctoral studies contract, the university can require the scholar Ph. D. student to supervise undergraduate laboratory work (4-6 hours per week).

Presentation of Work

1. In the department.

2. At national conferences.

3. At international conferences.

21.5.3. Thesis Work

Submission of Doctoral Written Thesis

1. <u>Languages</u> normally used: Romanian. The Ph. D. student can present a resume of the thesis in a foreign language (English, French, and German).

2. <u>No</u> credits allocated to the doctoral thesis.

3. The doctoral thesis is a substantial written report (a part previously unpublished, but another part with published work results).

Oral Presentation of Thesis Work

1. <u>Languages</u> normally used: Romanian.

2. Oral presentation with oral examination for an open audience.

3. <u>Duration</u>: typical duration of 2 hours no upper time limit.

21.5.4. Examination

Thesis Examination Board

1. <u>Composition</u>: from ten to twenty internal examiners and five external examiners, in a total of 20 members. The five "*rapporteurs*" should comment deeply on the content of the thesis.

2. <u>Selection:</u> the Examination Board is proposed by the supervisor and approved by the Faculty's Council.

Evaluation

1. <u>Result</u> based on the reading of the thesis and the oral presentation of the thesis work, with a grading system: *very good, good* or *satisfactory.* In special circumstances there can be "felicitation of the jury" in extra.

2. If the student gets a *satisfactory* degree, the board will specify the elements to be re-made or completed in the thesis and will require a new examination for an open audience. If, at the re-examination, the student gets the *satisfactory* degree again, the thesis will be *repelled* and the Ph. D. student will be expelled.

21.5. Questionnaires

Romania

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?**	Approx. 20
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
	The members of the Scientific Board are proposed by Scientific Committee of University and the Scientific Board is approved by the Senate of University.	
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.	Y
3.1.4.4	Assigning the thesis subject.	Y
3.1.4.5	Other. Please specify:	
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?

-

3.1.7.3 Other. Please specify:

-

3.1.8 The thesis supervisor of a doctoral student can be:

3.1.8.1 Any professor or lecturer in the department?

N

3.1.8.2 Any researcher in the department?

N

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?

N

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:

Y

Any professor or researcher of the Doctoral School who received attestation from National Council for Attestation of Academic Titles, Diplomas and Certificates.

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:

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**
max. 240 hrs	**max. 120 hrs**	**hrs**	**hrs**

3.2- COURSE WORK

3.2.2.2   **In which form is this coursework offered?**

        - As specialist graduate course units.   Y

        - As course units taken from the undergraduate programme.

        - Other. Please specify.

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

3.2.3   **Credit system**

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

3.2.3.2   Is it the ECTS system?   Y

        If not, what is the relationship with ECTS?

3.2.3.3   How many credits are allocated to coursework?   60
credits

3.2.4   **Monitoring**

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

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

        - Retake the exam.   Y

        - 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.   Y

3.4- CONTRIBUTION TO TEACHING:

3.4.1   Supervision of undergraduate laboratory.   Y/N

3.4.2   Teaching undergraduate courses.   N

        **Within doctoral studies contract, the university can require the scholar Ph. D. student
to supervise undergraduate laboratory work (4-6 hours per week).**

4 - AWARDING OF DOCTORAL DEGREE

4.1- SUBMISSION OF DOCTORAL THESIS

4.1.1	Which language is normally used for the thesis?	Romanian
4.1.2	Are alternative languages used for the thesis? Please Specify:	Y

Ph. D. student can present a resume of the thesis in a foreign language (English, French, and German).

4.1.3	Which language is normally used for the oral presentation and/or examination?	Romanian
4.1.4	Are alternative languages used in the oral presentation and examination? Please Specify:	-
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.	N
4.1.6.2	A collection of individual or co-authored scientific papers with an introduction and/or commentary.	N
4.1.6.3	Other. Please specify:	Y

A substantial written report (a part previously unpublished, but another part with published work results).

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?	Y
4.2.2	Composition of the thesis examination board. Please, give the typical number of:	
4.2.2.1	Internal examiners.	10-20
4.2.2.2	External examiners.	5
4.2.2.3	TOTAL.	20

Five "rapporteurs" who should comment deeply on the content of the thesis.

4.2- THESIS EXAMINATION AND DEGREE AWARDING

4.2.3   How is the examination board chosen?

4.2.3.1   By the supervisor.

4.2.3.2   By the scientific committee of the institution.

4.2.3.3   By the rector or equivalent.

4.2.3.4   By the national ministry.

4.2.3.5   Other. Please specify: Y

It is proposed by supervisor and approved by the Faculty's Council.

4.2.4   Do the examiners base their evaluation mark on:

4.2.4.1   Reading the thesis.   -

4.2.4.2   The oral presentation of the thesis work.   -

4.2.4.3   Both.   Y

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?   N

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

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.   -

4.2.6.2   May resubmit revised thesis.   -

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

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

Evaluation: Result based on the reading of the thesis and on the oral presentation of the thesis work, with a grading system: very good, good or satisfactory. In special circumstances there can be "felicitation of the jury" in extra.
Failure: if the student gets a satisfactory degree, the board will specify the elements to be re-made or completed in the thesis and will require a new examination for an open audience. If, at the re-examination, the student gets the satisfactory degree again, the thesis will be repelled and the Ph. D. student will be expelled.

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

Evaluation: Result based on the reading of the thesis and on the oral presentation of the thesis work, with a grading system: very good, good or satisfactory. In special circumstances there can be "felicitation of the jury" in extra.

RO: România

City	University	http address
Brasov	"Transilvania" University of Brasov	http://www.unitbv.ro
Bucuresti	"Politehnica" University of Bucharest	http://www.pub.ro
	University of Bucharest	http://www.unibuc.ro
Cluj-Napoca	"Babes-Bolyai" University of Cluj-Napoca	http://www.ubbcluj.ro
	Technical University of Cluj-Napoca	http://www.utcluj.ro
Constanta	"Ovidius" University of Constanta	http://www.univ-ovidius.ro
Craiova	University of Craiova	http://www.ucv.ro
Iasi	"Gh. Asachi" Technical University of Iasi	http://www.tuiasi.ro
	"Alexandru Ioan Cuza" University of Iasi	http://www.uaic.ro
Oradea	University of Oradea	http://www.uoradea.ro
Timisoara	"Politehnica" University of Timisoara	http://www.upt.ro
	West University of Timisoara	http://www.uvt.ro
Galati	"Dunarea de Jos" University of Galati	http://www.ugal.ro
Ploiesti	Petroleum - Gas University of Ploiesti	http://www.upg-ploiesti.ro
Pitesti	University of Pitesti	http://www.upit.ro
Sibiu	"Lucian Blaga" University of Sibiu	http://www.ulbsibiu.ro
Bacau	University of Bacau	http://www.ub.ro
Targu-Mures	"Petru Maior" University of Targu-Mures	http://www.uttgm.ro
Baia Mare	North University of Baia Mare	http://www.ubm.ro
Targu-Jiu	"Constantin Brancusi" University of Targu Jiu	http://www.utgjiu.ro
Suceava	"Stefan cel Mare" University of Suceava	http://www.usv.ro
Arad	"Aurel Vlaicu" University of Arad	http://www.uav.ro
Arad	"Vasile Goldis" University of Arad	http://www.uvvg.ro