

2. BG: България (Bulgaria)

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2.1. General information



In Bulgaria the curriculum is slightly different at each University. The basic courses are mandatory, but there are some courses that are optional. The Academic council of each University validates the curriculum in connection with the Academic Autonomy of the Bulgarian Universities.

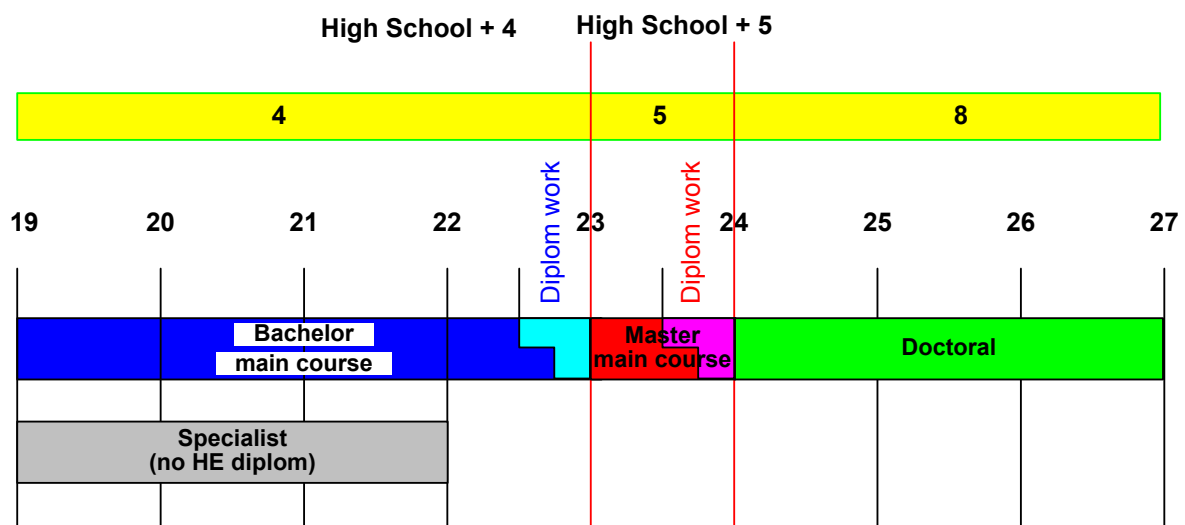


Figure 2.1: Bulgarian Higher Education System in EIE disciplines

2.1.1 Electrical and Information Engineering in Bulgaria, boundaries of the field of study

List of general Education Areas and Professional Directions and **EIE Education Areas and Professional Directions**

The List of general Education Areas and Professional Direction is established by the Bulgarian government. The Classification of Higher Education Areas and Professional Directions is prepared on the basis of Bulgarian Experience in Higher Education and is consistent with appropriate Education Areas and Professional Directions in the world.

Classification Of Higher Education Areas and Professional Directions			
Code	Higher Education Area	Code	Professional Direction
4	Natural Sciences, Mathematics and Informatics	4.6	Informatics and Computer Science
5	Technical Science	5.2 5.3	<u>Electrical Engineering, Electronics and Automation</u> including <u>Power engineering and electrical equipment</u> <u>Communication and computer Engineering</u>

The code 4.6. is removed because that professional direction is not classified as engineering yet.

2.1.2 Content, degrees and accreditations

The Government defines the pedagogical content of the degrees. It defines the curriculum and the list of the compulsory subjects in general for each of the above-mentioned professional directions for the period of education (semester shared). In this frame the Academic Council of each University independently (principle academic autonomy) determines and votes the teaching programmes for each professional direction.

2.1.3 Implementation of the Bologna-BMD system in Bulgaria

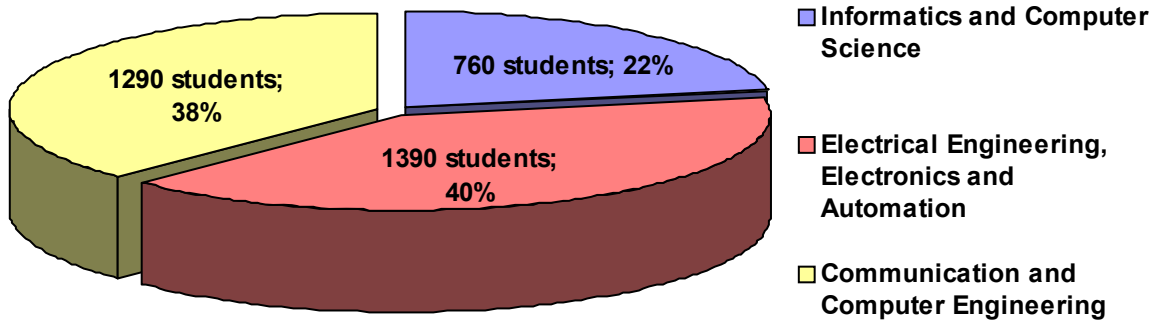
The Bologna-BMD system is now available in Bulgaria. The higher education system has been structured in three levels, bachelor-master/magister-doctor, since April 2002.

2.2. Figures on the weight of EIE in Bulgaria

Educational Institution, Teaching Staff and Students					
	2002/03	2003/04	2004/05	2005/06	2006/07
Institutions	42	42	43	43	43
Teaching Staff	18710	20218	20145	21534	21300
Students	211272	207340	214398	214693	226923
Doctors	4440	4834	5079	5163	4816

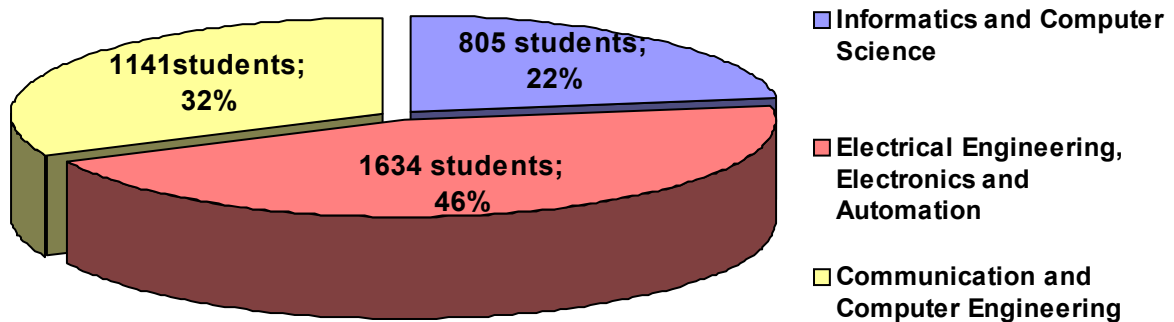
Distribution of the students in EIE specialities

2005/2006



full time students

2006/2007



full time students

N	High Education Schools 2006/07	Teaching form		EIE Students		
		M.sc+ Bach		M.sc+ Bach		
		Full time	Part time	Cod e	Full time	Part time
1	University of Sofia "Sv.Kliment Ohridski"	4360	778	4.6	360	
2	"Paisij Hilendarski" University of Plovdiv	1830	340	4.6	110	25
3	"Cyril i Methodius" University of Veliko Tarnovo	1355	325	4.6	60	
4	University of Shoumen " Ep.Konstantin Preslavski	860	260	4.6	85	15
5	South-West University "Neofit Rilski", Blagoevgrad	1268	145	4.6 5.3	45 50	
6	University of Rousse "Angel Kantchev"	1104	225	4.6 5.2 5.3	35 155 136	25 30 25
7	Technical University – Sofia	2763	30	5.2 5.3	885 600	30
8	Technical University – Varna	860	85	5.2 5.3	265 180	20 25
9	Technical University – Gabrovo	630	160	5.2 5.3	160 135	35 30
10	University of Mining and Geology- Sofia	412	112	4.6 5.2	45 64	34
11	Chemical Technology & Metallurgy University-Sofia	635	90	5.2	70	10
12	Higher School of Transport "Todor Kableshkov", Sofia	260	85	5.2 5.3	35 40	10 15
13	University of Economics, Varna	1437	200	4.6	65	
				4.6 5.2 5.3	805 1634 1141	65 135 95
	Total	17774	2835		3580	295

2.3. Degrees in EIE in Bulgaria

The Diplomas in EIE are defined by two elements: *the concrete title* and **the direction**:

2.3.1 Specialist level

➤ **Specialist** - 3 years after the secondary school for full-time students and 3,5 years for part-time students;

- 1) **Informatik, Informatics and Computer Science** (code 4.6), Natural Sciences, Mathematics and Informatics (code 4). => this degree is not, exactly, an "engineering" degree but is close to the border of "Electrical and Information Engineering"

- 2) *Electrical Engineer*, **Electrical Engineering, Electronics and Automation** (5.2), **Communication and Computer Engineering** (5.3), Technical Science (5)
- 3) *Electrical Engineer*, **Electrical Engineering, Electronics and Automation** (5.2), Technical Science (5)

2.3.2 Bachelor level

- **Bachelor** – 4 years after the secondary school for full-time students and 5 years for part-time students;
- 1) *Informatik*, **Informatics and Computer Science** (code 4.6), Natural Sciences, Mathematics and Informatics (code 4). => this degree is not, exactly, an "engineering" degree but is close to the border of "Electrical and Information Engineering"
 - 2) *Electrical Engineer*, **Electrical Engineering, Electronics and Automation** (5.2), **Communication and Computer Engineering** (5.3), Technical Science (5)
 - 3) *Electrical Engineer*, **Electrical Engineering, Electronics and Automation** (5.2), Technical Science (5)

Distribution of the general areas in EIE training for Bachelors

<i>Title and code of the speciality in EIE</i> Keywords	5.2.1. (PSRE)	5.2.2. (E)	5.2.3. (AICT)	5.3.1. (CST)	5.3.2. (CTT)
Basic Training					
Mathematics/ Physics	11 %	12 %	12 %	12 %	12 %
Electrical Engineering/ Instrumentation & Measurement	7 %	10 %	12 %	6 %	8 %
Electronics	4 %	38 %	7 %	12 %	10 %
Computers/ Informatics	3 %	9 %	24 %	35 %	11 %
Networks				4 %	9 %
Control Engineering		6 %	24 %		2 %
Communication, radio and video systems					29 %
Power Systems	40 %				
Mechanical Technology/ Systems	9 %				
Additional Training					
Foreign Language	4 %	4 %	4 %	4 %	4 %
Projects	2 %	1 %	4 %	8 %	1 %
Industrial Practice	3 %	4 %	4 %	3 %	4 %
Technical Documentation	1 %	2 %	2 %	3 %	3 %

Economics/ Management	1 %	5 %	3 %	3 %	2 %
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Codes and abbreviations of the specialities:

5.2.1. *Power Supply and Power Engineering (PSRE)*

5.2.2. *Electronics (E)*

5.2.3. *Automation and Information Control Engineering (AICT)*

5.3.1. *Computer Systems and Technologies (CST)*

5.3.2. *Communication Systems and Technologies (CTT)*

2.3.3 Master/Magister level

➤ **Master/Magister** – no less than 5 years after the secondary school for the non-bachelor specialities and for full-time students, 2 semesters after the bachelor level for full-time students or 3 semesters for part-time students);

- 1) *Informatik, Informatics and Computer Science* (code 4.6), Natural Sciences, Mathematics and Informatics (code 4). => this degree is not, exactly, an "engineering" degree but is close to the border of "Electrical and Information Engineering"
- 2) Electrical Engineer, **Electrical Engineering, Electronics and Automation** (5.2), **Communication and Computer Engineering** (5.3), Technical Science (5)
- 3) *Electrical Engineer, Electrical Engineering, Electronics and Automation* (5.2), Technical Science (5)

2.4. List of degrees

In Bulgaria, the academic fields are numbered (see part 2 of the monograph for more information). The references of the fields of Electrical and Information Engineering are the following:

5.2. Electrical Engineering, Electronics and Automation

5.3. Communication and Computer Engineering

The professional direction “**4.6** Informatics and Computer Science” is not classified as engineering yet.

City	Institution	4.6	5.2.	5.3.
Blagoevgrad Благоевград	South-West University “Neofit Rilski” Югозападен университет “Неофит Рилски”	X		X
Gabrovo Габрово	Technical University – Gabrovo Технически университет – Габрово		X	X
Plovdiv ПЛОВДИВ	“Paisij Hilendarski” University of Plovdiv Пловдивски университет “Паисий Хилендарски”	X		
Rousse Русе	University of Rousse “Angel Kantchev” Русенски университет “Ангел Кънчев”	X	X	X
Shoumen ШУМЕН	University of Shoumen “ Ep.Konstantin Preslavski” Шуменски университет “Еп. Константин Преславски”	X		
Sofia София	Technical University – Sofia Технически университет- София		X	X

Sofia София	University of Sofia “Sv.Kliment Ohridski” Софийски университет “Св. Климент Охридски”	X		
Sofia София	University of Mining and Geology – Sofia Минногеоложки университет - София	X	X	
Sofia София	Chemical Technology & Metallurgy University – Sofia Химикотехнологичен и металургичен университет		X	
Sofia София	Higher School of Transport “Todor Kableshkov”, Sofia Висше транспортно училище “Тодор Каблешков”			X
Varna Варна	Technical University-Varna Технически университет Варна		X	X
Varna Варна	University of Economics, Varna Икономически университет - Варна	X		
Veliko Tarnovo Велико Търново	“Cyril i Methodius”University of Veliko Tarnovo Великотърновски университет “Кирил и Методий”	X		

2.5. References

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

1. Decision № 337 of Council of Ministers to confirm the number of students and doctoral students admitted for education in higher schools and research institutions in the Republic of Bulgaria for the academic year 2996/2007, AZ-Buki, 20/2006
2. Statute No 86 from 12th of March 1997 for the validation of the government register of the education-qualification degrees in Higher Schools of the Republic of Bulgaria
3. Statistical Yearbook, 2002, 2003, 2004, 2005, 2006



Doctoral

Studies

2.5 Doctoral Studies in Bulgaria

2.5.1 Supervision

Scientific Board or Supervisor

The Scientific board is composed by twenty members elected by the Department. 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 or lecturer in the department with PhD.

Tasks of Scientific Board/Supervisor

- | | | |
|----|------------------------------------|-----|
| 1. | General management | YES |
| 2. | Deciding/advising layout of course | YES |
| 3. | Assigning a thesis subject | YES |

Duration

Four years.

2.5.2. Development

Courseware?

Yes.

Course Work

1. The students have to take course work during their doctoral degree preparation. The course work is assessed by examinations and is offered as specialist graduate course units.
2. Extension: 120 hours in the first year.
3. Credit system: no credit system.
4. No monitoring of the doctoral student. In case of failure the student must retake the exam.

Contribution to Teaching

Supervision of undergraduate laboratory work.

Presentation of Work

1. In the department.
2. At national conferences.
3. At international conferences.

2.5.3. Thesis Work

Submission of Doctoral Written Thesis

1. Language: Bulgarian. Alternative language: English.
2. No credits allocated to the doctoral thesis.
3. The doctoral thesis is a previously unpublished substantial written report.

Oral Presentation of Thesis Work

1. Language normally used: Bulgarian. Alternative language: English.
2. Oral presentation with oral examination for an open/public audience.
3. Duration: typical duration of 2 hours including examination with no upper time limit.

2.5.4. Examination

Thesis Examination Board

1. Composition: twelve to fifteen internal examiners and five to eight external examiners to compose a twenty member examination board.
2. Selection by the Department's Council.

Evaluation

1. Result based on the reading of the thesis and the oral presentation of the thesis work, with no grading system.
2. If the student fails, he/she may not resubmit for doctorate.

2.6. Questionnaires

Bulgaria

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?	Y
3.1.3.2	Chosen by the student?	N
3.1.3.3	Chosen in another way? Please specify:	N
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? | N |
| 3.1.7.3 | Other. Please specify: | 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? | 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? | N |
| 3.1.8.4 | Other methods. Please specify: | N |

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
		80 hrs	hrs	hrs	hrs

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.
- Other. Please specify.

3.2- COURSE WORK

3.2.2.3	Is the coursework assessed by examinations? If not, please give details:	Y
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? If not, what is the relationship with ECTS?	N
3.2.3.3	How many credits are allocated to coursework?	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.	Yes

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.	No

4 - AWARDING OF DOCTORAL DEGREE

4.1- SUBMISSION OF DOCTORAL THESIS

4.1.1	Which language is normally used for the thesis?	Bulgarian
4.1.2	Are alternative languages used for the thesis? Please Specify: English.	Y
4.1.3	Which language is normally used for the oral presentation and/or examination?	Bulgarian
4.1.4	Are alternative languages used in the oral presentation and examination? Please Specify: English.	YES
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.	Yes
4.1.6.2	A collection of individual or co-authored scientific papers with an introduction and/or commentary.	
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.	12-15
4.2.2.2	External examiners.	5-8
4.2.2.3	TOTAL.	20
	*3 to 4 among whom two “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:	Yes
	By the Department's Council.	
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.	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?	N
4.2.5	Is the oral part of the examination taken behind closed doors?	N
4.2.6	What happens if the student fails?	
4.2.6.1	May not resubmit for doctorate.	Y
4.2.6.2	May resubmit revised thesis.	N
4.2.6.3	May do further work as specified by examination board.	N
4.2.6.4	If the thesis is to be re-submitted is there a time limit for this to occur? Please specify:	N
4.2.7	Is there a grading system for the doctoral degree based on the quality of the work?	N

BG: България (Bulgaria)

City	Name of the institution (national language)	Name of the institution (English)	http address
Blagoevgrad	Югозападен университет "Неофит Рилски"	South-West University "Neofit Rilski"	http://www.swu.bg
Gabrovo	Технически университет – Габрово	Technical University – Gabrovo	http://www.tugab.bg
Plovdiv	Пловдивски университет "Паисий Хилендарски"	"Paisij Hilendarski" University of Plovdiv	http://www.uni-plovdiv.bg
Rousse	Русенски университет "Ангел Кънчев"	University of Rousse "Angel Kantchev"	http://www.ru.acad.bg
Sofia	Софийски университет "Климент Охридски"	University of Sofia "Sv.Kliment Ohridski"	http://www.uni-sofia.bg
Sofia	Технически университет-София	Technical University – Sofia	http://www.tu-sofia.bg
Sofia	Минногеоложки университет - Сопфия	University of Mining and Geology - Sofia	http://www.mgu.bg
Sofia	Химикотехнологичен и металургичен университет	Chemical Technology & Metallurgy University - Sofia	http://www.uctm.edu
Sofia	Висше транспортно училище "Тодор Каблешков"	Higher School of Transport "Todor Kableshkov", Sofia	http://www.vtu.acad.bg
Shoumen	Шуменски университет "Еп. Константин Преславски"	University of Shoumen "Ep.Konstantin Preslavski"	http://www.shu-bg.net
Varna	Технически университет Варна	Technical University – Varna	http://www.tu-varna.bg
Varna	Икономически университет	University of Economics, Varna	http://www.ue-varna.bg
Veliko Tarnovo	Великотърновски университет "Кирил и Методий"	"Cyril i Methodius" University of Veliko Tarnovo	http://www.uni-vt.bg