



# **PHARMACEUTICAL PRACTICE AND PHARMACY EDUCATION IN BULGARIA IN A 70 YEARS PROSPECTIVE**

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# The beginning...

Historically, the first Faculty of Pharmacy in Bulgaria was founded in 1942 as a Department of Pharmacy at the Faculty of Natural Sciences and Mathematics, Sofia University.

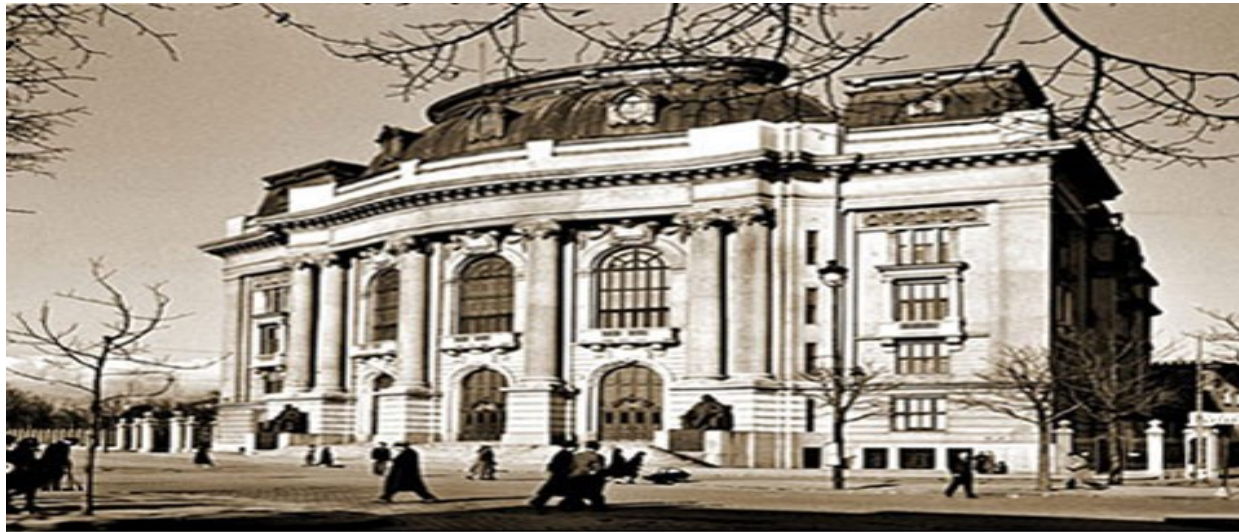
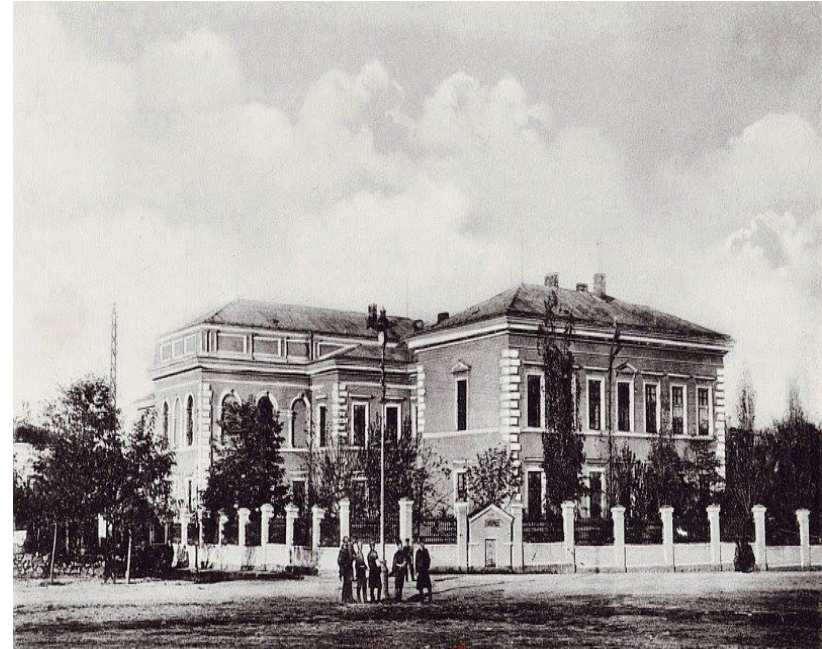


Figure 1. Sofia University St Clement of Ohrid is the oldest Bulgarian school of higher education, 1924.

- On 30 June 1951, with a State Decree No 325 it was transformed into a separate Pharmaceutical Faculty at the newly established Medical Academy “Valcho Chervenkov”.
- On 10 July 1951 the first elected Dean of the Faculty of Pharmacy – Sofia professor Dimitar Dalev entered his duties.



# Objective

- This study aims to describe the changes in the curriculum of the Faculty of Pharmacy-Sofia, Bulgaria in 70-years prospective and especially those that were inspired by the changes in the pharmacy practice.

# Methods

- The methods applied can be divided into:
  - methods for collecting of primary information: documental analysis, survey, comparative analysis of materials collected;
  - methods of collecting of secondary information: expertise, statistical methods.

# Results

- During its establishment the Faculty of Pharmacy comprises **2 departments**;
  - Pharmacognosy with Pharmaceutical technology;
  - Pharmaceutical chemistry.
- Nowadays there are **6 departments** in the Faculty of Pharmacy-Sofia:
  - Pharmaceutical Technology and Biopharmacy
  - Pharmacognosy and Pharmaceutical Botany
  - Pharmaceutical Chemistry
  - Chemistry
  - Pharmacology, Toxicology and Pharmacotherapy
  - Social Pharmacy and Pharmaceutical legislation

# Results

- The total number of the educated students in 1951 was **362**; in first course – 88, in second course – 86, in third course – 100 and in the fourth course – 88.
- The total number of the educated students in 2012 is **700** educated in Bulgarian and **500** educated in English.
- In 2003 was established the Pharmaceutical faculty in Plovdiv. Later in 2008 was established a Faculty of Pharmacy at the Medical University –Varna.



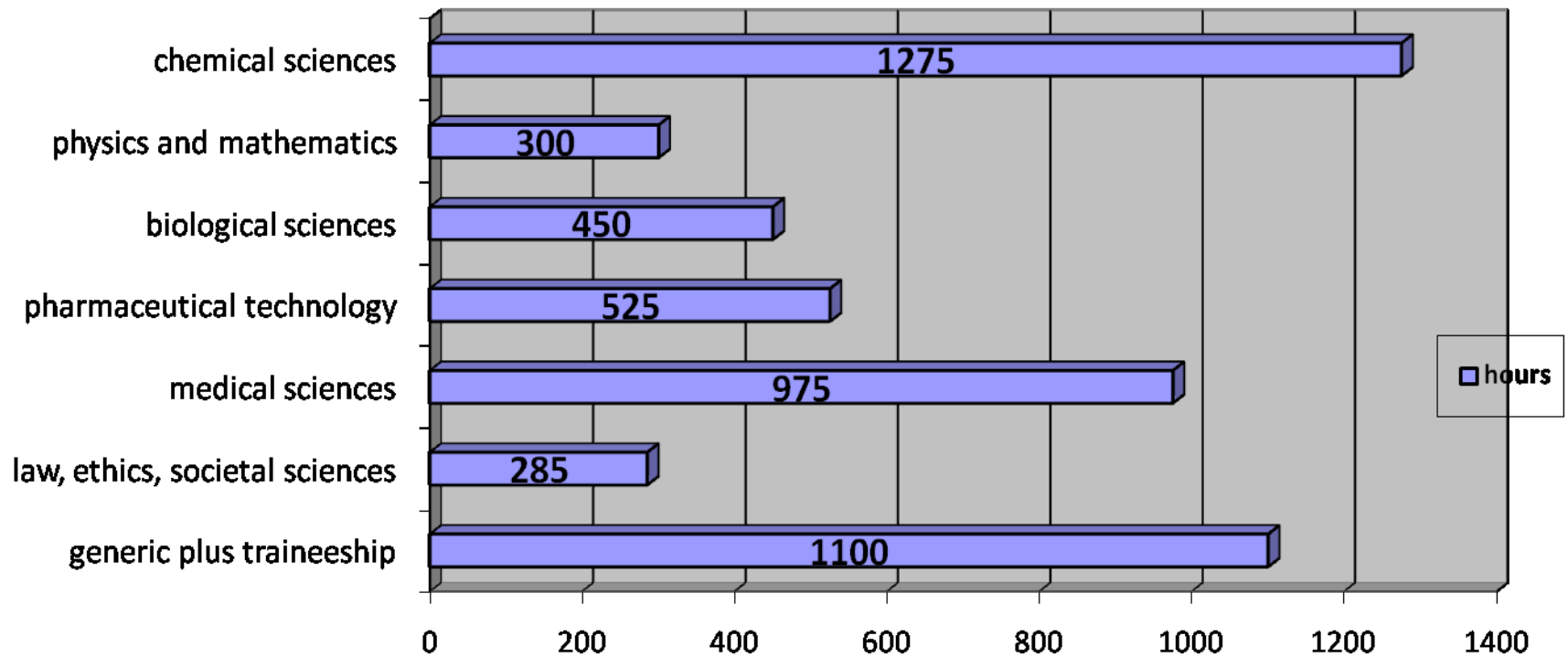
# Results

- The economic, political and social changes in Bulgaria, since 1989 have an important impact on all aspects of the social life in the country as well as on the pharmaceutical activities.
- The first Bulgarian Law of the drugs and pharmacies in the human medicine was introduced in 1995 and it tries to harmonize the Bulgarian drug regulation with that of the European Union.
- All these circumstances, together with the new drug discoveries, new drug technologies and new methodologies constantly challenge us to reconsider our roles as pharmacists in the health care system.



# Curriculum

- Since 1989 there have been provided many changes in the curriculum of the Faculty of Pharmacy-Sofia in order to harmonize it with the curricula of the other Pharmaceutical schools in the EU and to equalize the diplomas according to the EU directive 2005/36/EC on recognition of professional qualification and the Bologna declaration.
- The training of the students comprises lectures, seminars and practical laboratory work.



**Figure 1. Students hours by subject area**

# ECTS CREDIT TEACHING SYSTEM

SUBJECT	Exam / Semester	Total	Lectures	Practice	1st year		2nd year		3rd year		4th year		5th year	Credits
			Semester		I	II	III	IV	V	VI	VII	VIII	IX	
1. Mathematics	I	60	30	30	2/2	-	-	-	-	-	-	-	-	4
2. Biology	I	60	30	30	2/2	-	-	-	-	-	-	-	-	4
3. History of pharmacy	I	30	30	0	2/0	-	-	-	-	-	-	-	-	2
4. General and inorganic chemistry	II	120	45	75	2/3	1/2	-	-	-	-	-	-	-	8
5. Physics and biophysics	II	90	30	60	1/2	1/2	-	-	-	-	-	-	-	6
6. Latin language	II*	60	0	60	0/2	0/2	-	-	-	-	-	-	-	4
7. Foreign language	II*	120	0	120	0/4	0/4	-	-	-	-	-	-	-	8
8. Sports	IV*	120	0	120	0/2	0/2	0/2	0/2	-	-	-	-	-	8
9. Applied mathematics	II	45	15	30	-	1/2	-	-	-	-	-	-	-	3
10. Human anatomy	II	45	30	15	-	2/1	-	-	-	-	-	-	-	3
11. Human physiology	III	90	60	30	-	2/0	2/2	-	-	-	-	-	-	6
12. Pathoanatomy	III	30	15	15	-	-	1/1	-	-	-	-	-	-	2
13. Computer technologies	III*	30	0	30	-	-	0/2	-	-	-	-	-	-	2
14. Pathophysiology	IV	60	30	30	-	-	-	2/2	-	-	-	-	-	4
15. Analytical chemistry	IV	180	60	120	-	-	2/4	2/4	-	-	-	-	-	12
16. Organic chemistry	IV	180	60	120	-	-	2/4	2/4	-	-	-	-	-	12
17. Microbiology with virusology	IV	120	60	60	-	-	2/2	2/2	-	-	-	-	-	8
18. Physical chemistry with colloid chemistry	V	90	45	45	-	-	-	2/2	1/1	-	-	-	-	6
19. Pharmaceutical botany	V	120	60	60	-	-	-	2/2	2/2	-	-	-	-	8
20. Medical devices	V*	30	0	30	-	-	-	-	0/2	-	-	-	-	2
21. Biochemistry	V	90	45	45	-	-	-	-	3/3	-	-	-	-	6
22. Pharmaceutical chemistry	VI	225	90	135	-	-	-	-	3/2/2	3/2/3	-	-	-	15
23. Pharmaceutical technology – part 1	VI	210	60	150	-	-	-	-	2/5	2/5	-	-	-	14
24. Clinical chemistry	VI	60	15	45	-	-	-	-	-	1/3	-	-	-	4
25. Pharmacognosy – part 1	VII	210	60	150	-	-	-	-	-	2/5	2/5	-	-	14
26. Pharmacology	VII	180	60	120	-	-	-	-	-	2/4	2/4	-	-	12
27. Social pharmacy and pharmaceutical legislation	VII	150	60	90	-	-	-	-	-	2/3	2/3	-	-	10
28. Hygiene and ecology	VII	45	30	15	-	-	-	-	-	-	2/1	-	-	3
29. Pharmaceutical technology – part 2	VIII	225	60	165	-	-	-	-	-	-	2/5	2/6	-	15
30. Pharmaceutical analysis	VIII	225	60	165	-	-	-	-	-	-	2/5	2/6	-	15
31. Pharmacoeconomy	VIII	75	30	45	-	-	-	-	-	-	-	2/3	-	5
32. Toxicology	VIII	90	30	60	-	-	-	-	-	-	-	2/4	-	6
33. Medical genetics	VIII	30	15	15	-	-	-	-	-	-	-	1/1	-	2
34. Pharmacotherapy	IX	150	60	90	-	-	-	-	-	-	-	2/3	2/3	10
35. Biopharmacy and pharmacokinetics	IX	120	30	90	-	-	-	-	-	-	-	-	2/6	8
36. Bromatology	IX	60	30	30	-	-	-	-	-	-	-	-	2/2	4
37. Pharmacognosy – part 2	IX	90	30	60	-	-	-	-	-	-	-	-	2/4	6
38. Pharmaceutical care	IX	75	30	45	-	-	-	-	-	-	-	-	2/3	5
39. Optional course	IX	60	30	30	-	-	-	-	-	-	-	-	2/2	4
<b>Total</b>		<b>4050</b>	<b>1425</b>	<b>2625</b>										<b>270</b>

\* - Continuous assessment

# New disciplines

- Many new aspects and study areas have been introduced since then such as:
  - Biopharmacy, Clinical Laboratory, Biology and many others.
- Especially in the curricula of the Department of Social Pharmacy there have been introduced many new study areas such as:
  - History of Pharmacy, Pharmacoeconomy, Social pharmacy and pharmaceutical legislation and few free eligible disciplines like Pharmacoepidemiology, Pharmaceutical marketing and Paediatric drug forms.

# Pharmaceutical care

- The orientation of the pharmacist has changed from the product to the patient.
- The expansion of the role of pharmacists received an important boost in 1990, when Helper and Strand coined the term pharmaceutical care.
- Pharmaceutical care is the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve the patient's quality of life.



# Pharmaceutical care

- In 2000 a new course in Pharmaceutical care was introduced first as a free eligible subject and after that – two years later - as a regular discipline.
- The lectures and seminars of this subject are led during the first semester of the fifth year of the studies.
- The lectures are teaching new communicational skills and brain storming on different pharmacy practice cases.



# Erasmus student mobility programme



May 24-26, 2012, Utrecht, the Netherlands

# Erasmus Opportunities

## Opportunities available to students -

- Study Placement
- Diploma thesis development



# Diploma thesis

- During their last year of study the students can go and develop their diploma thesis project in another country and coming back they defend it during their State exam.

# **The benefits, recognized by the Faculty of Pharmacy – Sofia Erasmus students**

- discovering a different culture
- making new friends
- learning a foreign language/improving skills
- becoming more independent/confident
- gaining a better sense of what it means to be a EU Citizen
- Improving CV– increasing Employability.



May 24-26, 2012, Utrecht, the Netherlands



# Conclusions



May 24-26, 2012, Utrecht, the Netherlands

# Conclusions

- Pharmaceutical education in Bulgaria started 70 years ago with the foundation of two departments – pharmacognosy with galenic pharmacy and pharmaceutical chemistry.
- Now there are 6 separate departments in the Faculty of Pharmacy, Medical University –Sofia.
- The education curriculum is covering the requirements of the EU directives for harmonization of the education.

# Conclusions

- The new changes in the education lead to changes in the way of thinking of the pharmacists, to improvement of the quality of the pharmaceutical activities in the pharmacy, and to improvement of the communicational gap between the patient and the health care providers.
- The experience of the first Faculty of Pharmacy-Sofia marks the path for development of the newly established Faculties of Pharmacy in Plovdiv and in Varna.

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*THANK you!*