



SOFIA UNIVERSITY "ST. KLIMENT OHRIDSKI"

FACULTY OF CHEMISTRY AND PHARMACY

# CURRICULUM

Signed by:

Approved by the Academic Council,

Record of Proceedings No. 43/11.01.2018

Professional Field: 4:2 Chemistry

Educational and Qualification Degree: Master of Science

Subject Area: Computer chemistry

Master programme: Computational chemistry

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Form of Study: full-time

Length of Study: 3 semesters

Professional Qualification: Master in Computer chemistry – Computational chemistry

**C 2 5 2 4**  
CHC252418

**Major "Computer Chemistry" / M. Sc. Program "Computational Chemistry"**

for the academic year beginning in 2018

№	Course code	Course Title	Type – C, E, O	Semester	ECTS credits	Number of hours- total				Number of hours per week	Type of grading* - e, ca, m, a
						Total	Lectures	Seminars	Practical classes		
1	2	3	4	5	6	7	8	9	10	11	12

**Core courses**

1	C 0 1 8	Quantum chemistry for molecular systems	C	1	8	240	60	-	45	7	e
2	C 0 2 5	Quantitative structure-activity relationships of bioactive compounds	C	1	5	150	30	-	30	4	e
3	C 0 3 6	Programming	C	1	6	180	30	-	45	5	e
4	C 0 4 4	Molecular mechanics	C	1	4	120	30	-	30	4	e
5	C 0 5 6	Term project	C	1	6	180	15	-	45	4	ca
6	C 0 6 4	Modelling of periodic systems and nanostructures	C	2	4	120	30	-	30	4	e
7	C 0 7 4	Hybrid (QM/MM) methods	C	2	4	120	30	-	30	4	e
8	C 0 8 4	Computational methods in spectroscopy	C	2	4	120	30	30	0	4	e
9	C 0 9 6	Molecular dynamics and Monte Carlo simulations	C	2	6	180	45	-	30	5	e
10	C 1 0 9	Applied computational chemistry	C	2	9	270	30	-	105	9	ca
11	C 1 1 5	Analysis, reference and presentation of theoretical studies	C	3	5	150	30	-	30	4	ca

**Elective courses – courses with minimum of 4 ECTS (total) must be elected**

1	E 0 1 4	Introduction to Linux shell programming and data processing	E	2	4	120	30	-	30	4	e
2	E 0 2 4	Molecular kinetics and thermodynamics by ab initio MO calculations	E	2	4	120	30	-	30	4	e

Students are allowed to elect also other courses from all M.Sc. programs at the Faculty of Chemistry and Pharmacy.

The Faculty Council has decided that min. 50% of the total education load is independent study of the students

Type of grading:  
e-exam, ca-current assesment,  
m-matriculation,  
a-advances to the next semester

Study Internships								
No	code	Internship	Type – C, E, O	Semester	ECTS credits	Weeks	Hours	Type of grading* - e, ca, m
1	I 0 1 0	Research practicum	C	3	10	15	300	ca

Degree completion			
Form of degree completion	ECTS credits	First session for thesis defence	Second session for thesis defence
Master thesis	15	February-March	June-July

The curriculum has been approved by the Faculty Council, Record of Proceedings № 13 from 24. 04. 2018

DEAN:.....

*The Faculty Council has decided that min. 50% of the total education load is independent study of the students*

Type of grading:  
e-exam, ca-current assesment,  
m-matriculation,  
a-advances to the next semester

Sofia University "St. Kliment Ohridski"

**Curriculum Reference Statement**

M. Sc. Program "Computational chemistry"

Form of study: full-time; Length of study: three semesters

**In-class course load, ECTS credits and courses completed per semester**

Type of courses	I semester			II semester			III semester			Total		
	Course Load - number of hours	ECTS credits	Number of grades	Course Load - number of hours	ECTS credits	Number of grades	Course Load - number of hours	ECTS credits	Number of grades	Course Load - number of hours	ECTS credits	Number of grades
Core courses	360	29	5	390	27	5	60	5	1	810	61	11
Min. of elective courses				60	4	1				60	4	1
Study internships							150	10	1	150	10	1
<b>Total:</b>	<b>360</b>	<b>29</b>	<b>5</b>	<b>450</b>	<b>31</b>	<b>6</b>	<b>210</b>	<b>15</b>	<b>2</b>	<b>1020</b>	<b>75</b>	<b>13</b>

Degree completion	ECTS credits	Number of hours for preparation	First thesis defence session	Second thesis defence session
Master thesis	15	450	February-March	June-July

**Professional Qualification:** Master of Computer Chemistry - Computational Chemistry

**Record of Proceedings of the Faculty Council № 13 from 24. 04. 2018**

**Dean:**