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Program code

Major: Chemical engineering and advanced materials \ M. Sc. Program Functional materials

academic year beginning from 2015/ 2016

№	Course code	Course Title	Type – C, E, O	Term	ECT S credits	Number of classes- total				Number of classes per week	Type of Grading* - e, ca, m, a
						Total	Lectures	Seminars	Practical classes / practice		
1	2	3	4	5	6	7	8	9	10	11	12

**Core courses I semester**

1	C 0 1 4	Introduction to Materials science	C	1	5	150	30	0	30	4	e
2	C 0 2 6	Nanomaterials and basics of nanotechnologies	C	1	6	180	45	0	30	5	e
3	C 0 3 5	Metals and alloys	C	1	6	180	45	0	30	5	e
4	C 0 4 4	Polymer materials	C	1	4	120	30	0	30	4	e

**Elective Courses I semester\***

1	E 0 1 4	Structure and properties of special polymer materials	E		4	120	30	0	30	4	e
2	E 0 2 4	Structure and properties of materials	E		4	120	30	0	30	4	e
3	E 0 3 4	Advanced Physics	E		4	120	30	30	0	4	e
4	E 0 4 4	Corrosion of Materials	E		4	120	30	0	30	4	e
5	E 0 6 4	Kinetics of phase formation and crystal growth	E		4	120	30	0	30	4	e
6	E 0 7 4	Thermal analysis	E		4	120	30	0	30	4	e
7	E 0 8 4	X-Ray diffraction analysis	E		4	120	30	0	30	4	e
8	E 0 9 4	Optical and electron microscopy	E		4	120	30	0	30	4	e
9	E 1 0 4	Mechanical properties of materials	E		4	120	30	0	30	4	e
10	E 1 1 4	Physical modification of polymer materials	E		4	120	30	0	30	4	e
11	E 1 2 4	Polymer based nanocomposites	E		4	120	30	0	30	4	e
12	E 1 4 4	High strength polymer materials	E		4	120	30	0	30	4	e
13	E 1 6 4	Biomedical materials	E		4	120	30	0	30	4	e
14	E 1 7 4	Smart polymer materials	E		4	120	30	0	30	4	e
15	E 1 8 4	Semiconductor materials	E		4	120	30	0	30	4	e

1	2	3	4	5	6	7	8	9	10	11	12
16	E 1 9 4	Mathematical methods in nanotechnologies	E		4	120	30	0	15	3	e
17	E 2 0 4	Nanostructures modeling	E		4	120	30	0	15	3	e
18	E 2 3 4	Nanoporous materials	E		4	120	30	0	15	3	e
19	E 2 5 4	Biomacromolecules	E		4	120	30	0	15	3	e
20	E 2 6 4	Biomedical nanotechnologies	E		4	120	30	0	15	3	e
21	E 2 7 4	Nanosized environment polutants	E		4	120	30	0	15	3	e

1	2	3	4	5	6	7	8	9	10	11	12
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**Core courses II semester\***

5	C	0	5	4	Ceramic materials	C	2	4	120	30	0	30	4	e
6	C	0	6	4	Nanocolloids	C	2	4	120	45	0	15	4	e
7	C	0	7	5	Instrumental methods in Materials science	C	2	6	180	30	0	45	5	e

**Elective Courses II semester**

1	E	0	1	4	Structure and properties of special polymer materials	E		4	120	30	0	30	4	e
2	E	0	2	4	Structure and properties of materials	E		4	120	30	0	30	4	e
3	E	0	3	4	Advanced Physics	E		4	120	30	30	0	4	e
4	E	0	4	4	Corrosion of Materials	E		4	120	30	0	30	4	e
5	E	0	6	4	Kinetics of phase formation and crystal growth	E		4	120	30	0	30	4	e
6	E	0	7	4	Thermal analysis	E		4	120	30	0	30	4	e
7	E	0	8	4	X-Ray diffraction analysis	E		4	120	30	0	30	4	e
8	E	0	9	4	Optical and electron microscopy	E		4	120	30	0	30	4	e
9	E	1	0	4	Mechanical properties of materials	E		4	120	30	0	30	4	e
10	E	1	1	4	Physical modification of polymer materials	E		4	120	30	0	30	4	e
11	E	1	2	4	Polymer based nanocomposites	E		4	120	30	0	30	4	e
12	E	1	4	4	High strength polymer materials	E		4	120	30	0	30	4	e
13	E	1	6	4	Biomedical materials	E		4	120	30	0	30	4	e
14	E	1	7	4	Smart polymer materials	E		4	120	30	0	30	4	e
15	E	1	8	4	Semiconductor materials	E		4	120	30	0	30	4	e
16	E	1	9	4	Mathematical methods in nanotechnologies	E		4	120	30	0	15	3	e
17	E	2	0	4	Nanostructures modeling	E		4	120	30	0	15	3	e
18	E	2	3	4	Nanoporous materials	E		4	120	30	0	15	3	e
19	E	2	5	4	Biomacromolecules	E		4	120	30	0	15	3	e
20	E	2	6	4	Biomedical nanotechnologies	E		4	120	30	0	15	3	e
21	E	2	7	4	Nanosized environment pollutants	E		4	120	30	0	15	3	e

\*Minimum 12 ECTS credits should be accumulated from elective courses

1	2	3	4	5	6	7	8	9	10	11	12
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**Study Internships**

№	code	Internship	Type - C, E, O	Semester	ECTS - credits	Weeks	Number classes	Type or course completion
1	P 0 1 4	Course project	c	1	4	15	120	e
2	P 0 3 0	Pre-diploma practice	c	3	17	15	510	ca

**Practices**

№	код	Title	Type - C, E, O	Semester	ECTS - credits	Weeks	Number classes	Type or course completion
1	P 0 2 7	Reasearch practice	c	2	7	3	210	ca

**Degree completion**

Form of degree completion	ECTS credits	First state exam/ thesis defence session	Second state exam/thesis defence session
Defense of diploma thesis	15	february-march	june-july

The curriculum has been approved by the Faculty Council, Record of Proceedings № 5 from 18.11.2014

DEAN:.....

Sofia University "St. Kliment Ohridski"

**Curriculum Reference Statement**

Subject Area Chemical Engineering and advanced Materials / M. Sc. Program Functional materials

Form of study: full-time length of study: 3 semesters

Course Load, ECTS -credits and course completion per semester																		
Type of courses	I semester			II семестър			III	IV	V	VI	VII	VIII	IX	X	Total			
	Course Load - number of classes	ECTS - credits	number of grades	Course Load - number of classes	ECTS - credits	number of grades										Course Load - number of classes	ECTS - credits	number of grades
Compulsory courses	270	21	4	195	14	3										465	35	7
Min. of elective courses	60	4	1	120	8	2										180	12	3
Study internships	60	4	1	105	7	1	255	17	1							420	28	3
<b>Total:</b>	<b>390</b>	<b>29</b>	<b>6</b>	<b>420</b>	<b>29</b>	<b>6</b>	<b>255</b>	<b>17</b>	<b>1</b>							<b>1065</b>	<b>75</b>	<b>13</b>

Degree completion	ECTS - credits	number of hours for preparation	First state exam/ thesis defence session	Second state exam/ thesis defence
Defense of diploma thesis	15	450	February-March	June-July

**Professional Qualification: Master in Chemical engineering and advanced materials - Functional materials**

Record of Proceedings of the Faculty Council № 5 from 18.11.2014

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