

**Petroleum-Gas University of Ploiești**  
**Faculty of Petroleum Refining and Petrochemistry**

**CURRICULUM for BACHELOR DEGREE**

**Valid for academic year 2018-2019**

**Field of study:** Chemical engineering

**Programme of study:** Petroleum Processing and Petrochemistry in English

**Duration of study:** 8 Semesters/244 credits (ECTS)

**Type of study:** Full time

Petroleum-Gas University of Ploiești  
 Faculty: Petroleum Refining and Petrochemistry  
 Level of qualification: Bachelor Degree  
 Field of study/Programme of study: Chemical engineering / Petroleum Processing and Petrochemistry

## I. SPECIFIC COMPETENCES PROVIDED THROUGH THE STUDY PROGRAM

### I.1. Professional competences

- I.1.1. Description, analysis and use fundamental concepts and theories in the field of engineering sciences  
 I.1.2. Description, analysis and use fundamental concepts and theories in the field of chemistry and chemical engineering  
 I.1.3. Exploitation of processes and installations with application of knowledge in the field of chemical engineering  
 I.1.4. Description, analysis and use fundamental concepts and theories specific to petroleum processing and petrochemistry.  
 I.1.5. Determination of physical-chemical characteristics, structure and properties of petroleum and petrochemical products in order to determine their quality.  
 I.1.6. Carry out advisory, training and training activities in the field of oil processing and petrochemistry

### I.2. Cross-curricular competences

- I.2.1. Performing of professional tasks according to the specified requirements and within the required deadlines, taking into account the norms of professional ethics and moral behavior, following a predefined work plan with qualified guidance.  
 I.2.2. Solving professional tasks in concordance to the overall tasks by working in a group and subordinate task distribution.  
 I.2.3. Information and permanent documentation in its field of activity in Romanian language and in an international language, by using modern information and communication methods.

## II. DEGREE STRUCTURE

244 ECTS, distributed as follows

- 215 ECTS for compulsory courses
- 29 ECTS for optional courses
- 10 ECTS for graduation exam

## III. ACADEMIC YEAR STRUCTURE (in weeks)

	Courses given		Examination period			Industrial training	Holiday		
	Sem 1	Sem 2	Winter	Summer	Autumn	Summer	Winter	Spring	Summer
<b>Year I</b>	14	14	3	3	3	-	3	1	11
<b>Year II</b>	14	14	3	3	3	3	3	1	8
<b>Year III</b>	14	14	3	3	3	3	3	1	8
<b>Year IV</b>	14	14	3	3	-	-	3	1	-

## IV. STRUCTURE OF THE PROGRAMME (in hours/week)

	Courses given	
	Sem 1	Sem 2
<b>Year I</b>	26	26
<b>Year II</b>	28	28
<b>Year III</b>	28	28
<b>Year IV</b>	28	28

## V. GRADUATION EXAM- between 10-30 July

- Graduation thesis -10 credits

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**CURRICULUM – 1<sup>st</sup> Year of study  
 (Academic year 2018-2019)**

No.	Course unit name	Code (Type)	Contact hours per weeks			Number of hours per semester				ECTS credits	Assessment forms
			Course (C)	Seminar (S)	Laboratory (L)	NOAD <sub>sem</sub>			IS		
						Course	S, L, P	TOTAL			
<b>A. COMPULSORY (C) AND OPTIONAL (O) COURSES</b>											
<b>1<sup>st</sup> SEMESTER</b>											
1	Linear algebra, analytical and differential geometry	DI 101 F.EN (DF)	3	2	-	42	28	70	80	6	E1
2	Chemistry 1	DI 102 F.EN (DF)	4	-	2	56	28	84	91	7	E1
3	Analytical Chemistry	DI 103 F.EN (DD)	2	-	2	28	28	56	94	6	E1
4	Computer Programming and Programming Languages	DI 104 F.EN (DF)	2	-	2	28	28	56	44	4	V1
5	Physics 1	DI 105 F.EN (DF)	2	-	2	28	28	56	69	5	E1
6	Physical Education 1	DI 106 F.EN (DC)	-	1	-	-	14	14	-	1	V1
7	A. Foreign Languages1 (Romanian)	DO 107 F.1.EN (DC)	-	-	-	-	-	-	-	-	-
8	A. Foreign Languages1 (French)	DO 107 F.2.EN (DC)	-	2	-	-	28	28	22	2	V1
9	A. Foreign Languages1 (German)	DO 107 F.3.EN (DC)	-	-	-	-	-	-	-	-	-
<b>TOTAL</b>			<b>13</b>	<b>5</b>	<b>8</b>	<b>182</b>	<b>182</b>	<b>364</b>	<b>400</b>	<b>30 + 1</b>	
<b>2<sup>nd</sup> SEMESTER</b>											
10	Mathematical Analysis	DI 108 F.EN (DF)	2	3	-	28	42	70	105	7	E2
11	Chemistry 2	DI 109 F.EN (DF)	2	-	2	28	28	56	94	6	E2
12	Instrumental Analysis 1	DI 110 F.EN (DD)	2	-	3	28	42	70	55	5	E2
13	Economics	DI 111 F.EN (DC)	2	1	-	28	14	42	33	3	V2
14	Physical Education 2	DI 112 F.EN (DC)	-	1	-	-	14	14	-	1	V2
15	Computer Aided Graphics	DI 113 F.EN (DF)	-	2	-	-	28	28	22	2	V2
16	A. Physics 2	DO 114 F.1.EN (DF)	2	-	2	28	28	56	69	5	E2
17	A. Physics 3	DO 114 F.2.EN (DF)	2	-	2	28	28	56	69	5	E2
18	B. Foreign Languages2 (Romanian)	DO 115 F.1.EN (DC)	-	-	-	-	-	-	-	-	-
19	B. Foreign Languages2 (French)	DO 115 F.2.EN (DC)	-	2	-	-	28	28	22	2	V2
20	B. Foreign Languages2 (German)	DO 115 F.3.EN (DC)	-	-	-	-	-	-	-	-	-
<b>TOTAL</b>			<b>10</b>	<b>9</b>	<b>7</b>	<b>140</b>	<b>224</b>	<b>364</b>	<b>400</b>	<b>30 + 1</b>	
<b>B. FACULTATIVE COURSES (F)</b>											
<b>1<sup>st</sup> SEMESTER</b>											
21	Introduction to Petroleum Science	DFC116F.EN (DS)	2	-	-	28	-	28	22	2	V1
<b>TOTAL</b>			<b>2</b>	<b>-</b>	<b>-</b>	<b>28</b>	<b>-</b>	<b>28</b>	<b>22</b>	<b>2</b>	<b>V1</b>

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### CURRICULUM – 2<sup>nd</sup> Year of study

No.	Course unit name	Code (Type)	Contact hours per weeks			Number of hours per semester				ECTS credits	Assessment forms
			Course (C)	Seminar (S)	Laboratory (L)	NOAD <sub>sem</sub>			IS		
						Course	S, L, P	TOTAL			
<b>A. COMPULSORY (C) AND OPTIONAL (O) COURSES</b>											
<b>3<sup>rd</sup> SEMESTER</b>											
22	Organic chemistry 1	DI 201 F.EN (DD)	4	-	2	56	28	84	91	7	E3
23	Physical chemistry 1	DI 202 F.EN (DD)	2	1	2	28	42	70	55	5	E3
24	Instrumental Analysis 2	DI 203 F.EN (DD)	2	-	2	28	28	56	44	4	E3
25	Physical-Chemistry of Petroleum	DI 204 F.EN (DS)	3	-	3	42	42	84	66	6	E3
26	Electrotechnics and Electronics	DI 205 F.EN (DD)	1	-	1	14	14	28	47	3	V3
27	Electrochemistry	DO 206 F.EN (DD)	1	-	1	14	14	28	47	3	V3
28	Physical education 3	DI 207 F.EN (DC)	-	1	-	-	14	14	-	1	V3
29	A. Foreign Languages 3(Romanian)	DO 208 F.1.EN (DC)	-	2	-	-	28	28	22	2	V3
30	A. Foreign Languages3 (French)	DO 208 F.2.EN (DC)									
31	A. Foreign Languages3 (German)	DO 208 F.3.EN (DC)									
<b>TOTAL</b>			<b>13</b>	<b>4</b>	<b>11</b>	<b>182</b>	<b>210</b>	<b>392</b>	<b>372</b>	<b>30+</b>	<b>1</b>
<b>4<sup>th</sup> SEMESTER</b>											
32	Organic chemistry 2	DI 209 F.EN (DD)	4	-	2	56	28	84	66	6	E4
33	Physical chemistry 2	DI 210 F.EN (DD)	3	-	2	42	28	70	55	5	E4
34	Numerical Methods	DI 211 F.EN (DF)	2	-	2	28	28	56	19	3	V4
35	Industrial catalysis and catalysts	DI 212 F.EN (DD)	2	-	2	28	28	56	44	4	E4
36	Pollution Prevention and Environmental Protection	DI 213 F.EN (DD)	2	-	-	28	-	28	22	2	V4
37	Physical education 4	DI 214 F.EN (DC)	-	1	-	-	14	14	-	1	V4
38	A. Strength of Materials	DO 215 F.1.EN (DD)	2	-	2	28	28	56	44	4	E4
39	A. Science of Materials	DO 215 F.2.EN (DD)	2	-	2	28	28	56	44	4	E4
40	B. Foreign Languages4 (Romanian)	DO 216 F.1.EN (DC)	-	2	-	-	28	28	22	2	V4
41	B. Foreign Languages4 (French)	DO 216 F.2.EN (DC)									
42	B. Foreign Languages4 (German)	DO 216 F.3.EN (DC)									
43	Industrial Training 1 (3 weeks x 30 hours)	DI 217 F.EN (DD)	-	-	-	-	90	90	-	4	V4
<b>TOTAL</b>			<b>15</b>	<b>3</b>	<b>10</b>	<b>210</b>	<b>272</b>	<b>482</b>	<b>272</b>	<b>30+</b>	<b>1</b>
<b>B. FACULTATIVE COURSES (F)</b>											
<b>3<sup>rd</sup> SEMESTER</b>											
44	General Biotechnology	DFC218 F.EN (DD)	1	-	2	14	28	42	58	4	V3
<b>TOTAL</b>			<b>1</b>	<b>-</b>	<b>2</b>	<b>14</b>	<b>28</b>	<b>42</b>	<b>58</b>	<b>4</b>	<b>V3</b>

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### CURRICULUM – 3<sup>rd</sup> Year of study

No.	Course unit name	Code (Type)	Contact hours per weeks			Number of hours per semester				ECTS credits	Assessment forms
			Course (C)	Seminar (S)	Laboratory (L)	NOAD <sub>sem</sub>			IS		
						Course	S, L, P	TOTAL			
<b>A. COMPULSORY (C) AND OPTIONAL (O) COURSES</b>											
<b>5<sup>th</sup> SEMESTER</b>											
45	Petroleum Distillation Technology	DI 301 F.EN (DS)	3	-	2	42	28	70	55	5	E5
46	Elements of Mechanical Engineering	DI 302 F.EN (DD)	2	-	1	28	14	42	58	4	E5
47	Elements of Mechanical Engineering-Project	DI 303 F.EN (DD)	-	1	-	-	14	14	36	2	V5
48	Fluid Dynamics	DI 304 F.EN (DD)	2	-	2	28	28	56	69	5	E5
49	Reaction Engineering and Chemical Reactors	DI 305 F.EN (DS)	3		3	42	42	84	66	6	E5
50	Heat Transfer Processes 1	DI 306 F.EN (DD)	3		2	42	28	70	55	5	E5
51	A. Safety of Industrial Machinery and Equipment	DO 307 F.1.EN (DD)	2	-	2	28	28	56	19	3	V5
52	A. Corrosion in Petroleum Industry and Petrochemistry	DO 307 F.2.EN (DS)	2	-	2	28	28	56	19	3	E8
<b>TOTAL</b>			<b>15</b>	<b>1</b>	<b>12</b>	<b>210</b>	<b>182</b>	<b>392</b>	<b>358</b>	<b>30</b>	
<b>6<sup>th</sup> SEMESTER</b>											
53	Petroleum Distillation Technology-Project	DI 308 F.EN (DS)	-	1	-	-	14	14	36	2	V6
54	Mass Transfer Processes 1	DI 309 F.EN (DD)	3	-	3	42	42	84	41	5	E6
55	Heat Transfer Processes 2	DI 310 F.EN (DD)	3	-	2	42	28	70	55	5	E6
56	Thermocatalytical Processes in Petroleum Industry 1	DI 311 F.EN (DS)	3	-	3	42	42	84	41	5	E6
57	Petrochemical Technology 1	DI 312 F.EN (DS)	3	-	3	42	42	84	41	5	E6
58	Process Control in the Chemical Industry 1	DI 313 F.EN (DD)	2	-	2	28	28	56	44	4	E6
59	Industrial Training 2 (3 weeks x 30 hours)	DI 314 F.EN (DS)	-	-	-	-	90	90	-	4	V6
<b>TOTAL</b>			<b>14</b>	<b>1</b>	<b>13</b>	<b>196</b>	<b>286</b>	<b>482</b>	<b>258</b>	<b>30</b>	
<b>B. FACULTATIVE COURSES (F)</b>											
<b>5<sup>th</sup> SEMESTER</b>											
60	Transportation and storage of petroleum products	DFC315F.EN (DS)	2	-	2	28	28	56	44	4	V5
61	Foreign Languages 5	DFC316F.EN (DC)	-	2	-	-	28	28	22	2	V5
<b>TOTAL</b>			<b>2</b>	<b>2</b>	<b>2</b>	<b>28</b>	<b>56</b>	<b>84</b>	<b>66</b>	<b>6</b>	
<b>6<sup>th</sup> SEMESTER</b>											
62	Optimization of technological processes	DFC317F.EN (DD)	2	-	2	28	28	56	44	4	V6
63	Foreign Languages 6	DFC318F.EN (DC)	-	2	-	-	28	28	22	2	V6
<b>TOTAL</b>			<b>2</b>	<b>2</b>	<b>2</b>	<b>28</b>	<b>56</b>	<b>84</b>	<b>66</b>	<b>6</b>	

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### CURRICULUM – 4<sup>th</sup> Year of study

No.	Course unit name	Code (Type)	Contact hours per weeks				Number of hours per semester				ECTS credits	Assessment forms
			Course (C)	Seminar (S)	Laboratory (L)	Project (P)	NOAD <sub>sem</sub>			IS		
							Course	S, L, P	TOTAL			
<b>A. COMPULSORY (C) AND OPTIONAL (O) COURSES</b>												
<b>7<sup>th</sup> SEMESTER</b>												
64	Thermocatalytical Processes in Petroleum Industry 2	DI 401 F.EN (DS)	3	-	3	-	42	42	84	41	5	E7
65	Thermocatalytical Processes in Petroleum Industry 3- Project	DI 402 F.EN (DS)	-	-	-	1	-	14	14	36	2	V7
66	Petrochemical Technology 2	DI 403 F.EN (DS)	2	-	2	-	28	28	56	69	5	E7
67	Mass Transfer Processes 2	DI 404 F.EN (DD)	3	-	3	-	42	42	84	66	6	E7
68	Heat Transfer Processes 3- Project	DI 405 F.EN (DD)	-	-	-	1	-	14	14	36	2	V7
69	Management and Marketing	DI 406 F.EN (DD)	2	1	-	-	28	14	42	33	3	V7
70	Process Control in the Chemical Industry 2	DI 407 F.EN (DD)	2	-	2	-	28	28	56	44	4	E7
71	Thermoenergetics	DI 408 F.EN (DS)	2	-	1	-	28	14	42	33	3	V7
<b>TOTAL</b>			<b>14</b>	<b>1</b>	<b>11</b>	<b>2</b>	<b>196</b>	<b>196</b>	<b>392</b>	<b>358</b>	<b>30</b>	<b>-</b>
<b>8<sup>th</sup> SEMESTER</b>												
72	Mass Transfer Processes 3- Project	DI 409 F.EN (DD)	-	-	-	1	-	14	14	36	2	V8
73	Petrochemical Technology 3- Project	DI 410 F.EN (DS)	-	-	-	1	-	14	14	36	2	V8
74	Organic Technical Compounds	DO 411 F.EN (DS)	3	-	2	-	42	28	70	30	4	E8
75	Lube oils Manufacturing Technology	DI 412 F.EN (DS)	4	-	3	-	56	42	98	27	5	E8
76	A. Complex Schemes in Petroleum Processing	DO 413 F.1.EN (DS)	3	-	2	-	42	28	70	30	4	E8
77	A. Unconventional energy conversion technologies	DO 413 F.2.EN (DS)	3	-	2	-	42	28	70	30	4	E8
78	B. Computer-aided chemical engineering	DO 414 F.1.EN (DS)	3	-	2	-	42	28	70	55	5	E8
79	B. Modeling and Simulation of Chemical Processes	DO 414 F.2.EN (DS)	3	-	2	-	42	28	70	55	5	E8
80	Elaboration of Diploma Project	DI 415 F.EN (DS)	-	-	-	4	-	56	56	44	4	V8
81	Diploma Project Industrial Training (2 weeks)	DI 416 F.EN (DS)	-	-	-	-	-	60	60	-	4	V8
<b>TOTAL</b>			<b>13</b>	<b>-</b>	<b>9</b>	<b>6</b>	<b>182</b>	<b>270</b>	<b>452</b>	<b>258</b>	<b>30</b>	<b>-</b>
<b>B. FACULTATIVE COURSES (F)</b>												
<b>7<sup>th</sup> SEMESTER</b>												
82	Safety in the operation of installations in the oil processing industry	DFC417F.EN (DS)	2	-	1	-	28	14	42	33	3	V7
83	Foreign Languages 7	DFC418F.EN (DC)	-	2	-	-	-	28	28	22	2	V7
<b>TOTAL</b>			<b>2</b>	<b>2</b>	<b>1</b>	<b>-</b>	<b>28</b>	<b>42</b>	<b>70</b>	<b>55</b>	<b>5</b>	<b>-</b>
<b>8<sup>th</sup> SEMESTER</b>												
84	Marketing of Petroleum Products	DFC419F.EN (DS)	2	-	-	-	28	-	28	22	2	V8
<b>TOTAL</b>			<b>2</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>28</b>	<b>-</b>	<b>28</b>	<b>22</b>	<b>2</b>	<b>V8</b>

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#### OVERALL BALANCE

Code	Course unit	Contact hours	IS	%	ARACIS standards	Number of credits			
						Year I	Year II	Year III	Year IV
1	Compulsory	2900	2427	87.35		51+2	52+2	57	51
2	Optional	420	249	12.65	Min 10%	9	8	3	9
<b>Total</b>		<b>3320</b>	<b>2676</b>	<b>100</b>		<b>60+2</b>	<b>60+2</b>	<b>60</b>	<b>60</b>
3	Elective	336	289	10.1	Min 10%	2	4	12	7

Code	Course type	Contact hours	IS	%	ARACIS standards
1	Fundamental	532	593	16.02	Min 17%
2	Speciality	1200	687	36.14	Min 25%
3	Domain	1378	1275	41.51	Min 38%
4	Complementary	210	121	6.33	Max 8%
<b>TOTAL</b>		<b>3320</b>	<b>2676</b>	<b>100</b>	

**IS:** estimated number of individual study hours per week

**Contact hours:** the number hours in contact with instructor, i.e. class time; C= course, S= seminar; L=laboratory, P = project

**Assessment forms:** E=exam; V=verification

**Type:** DF= fundamental course unit, DS= speciality course unit, DD= domain course unit, DC= complementary course unit.

DI xxx F.EN= Compulsory course unit, DO xxx F.EN=Optional course unit,

DFCxxx F.EN=Elective course units

**European Credit Transfer and Accumulation System (ECTS):** 1 ECTS = 25 hours