Programme Chemistry 2020/2021

During the second degree chemistry studies student is obliged to obtained: (a) at least 6 ECTS and not more than 8 ECTS for subjects that are not related to the field of studies (general courses), including general university subjects from the areas of humanities or social sciences minimum 5 ECTS.

Each year a student is expected to accumulate 60 ECTS credits (however, minimum 30 ECTS credits per a semester).

Semestr 1.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
<th>Lecture</th>
<th>Laboratory</th>
<th>ECTS points</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theoretical Chemistry A**</td>
<td>60</td>
<td>30</td>
<td>30</td>
<td>5</td>
<td>Exam</td>
</tr>
<tr>
<td>Environmental Analysis</td>
<td>45</td>
<td>15</td>
<td>30</td>
<td>4,5</td>
<td>Exam</td>
</tr>
<tr>
<td>Biochemistry</td>
<td>60</td>
<td>30</td>
<td>30</td>
<td>5</td>
<td>Exam</td>
</tr>
<tr>
<td>Nuclear Chemistry</td>
<td>60</td>
<td>30</td>
<td>30</td>
<td>5</td>
<td>Exam</td>
</tr>
<tr>
<td>Crystallography A**</td>
<td>30</td>
<td>10</td>
<td>20</td>
<td>3</td>
<td>Exam</td>
</tr>
<tr>
<td>Directional Course (PK)*</td>
<td>75</td>
<td>0</td>
<td>75</td>
<td>7,5</td>
<td>Grade</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>330</strong></td>
<td><strong>115</strong></td>
<td><strong>215</strong></td>
<td><strong>30</strong></td>
<td></td>
</tr>
</tbody>
</table>

* Elective courses selected by the student in consultation with the Scientific supervisor (laboratories from the list available in English)
** Obligatory courses for people at the undergraduate level that did not pass such course in the proper thematic size and hours. Student can choose particular course at the primary (A) or advanced (level B) level.

Directional Course

- Organic synthesis – laboratory; 4,0 ECTS
  prof. dr hab. Tomasz Bauer

- Quantum chemistry A – laboratory; 4,0 ECTS
  dr Małgorzata Jeziorska

- Instrumental analysis – lecture and laboratory; 4,5 ECTS
### Semester 2. (courses selected by the student in consultation with the Scientific supervisor)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
<th>Lecture</th>
<th>Laboratory</th>
<th>ECTS points</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specialization Lecture no.1</td>
<td>30</td>
<td>30</td>
<td>0</td>
<td>3</td>
<td>Exam</td>
</tr>
<tr>
<td>Specialization Lecture no.2</td>
<td>30</td>
<td>30</td>
<td>0</td>
<td>3</td>
<td>Exam</td>
</tr>
<tr>
<td>Monographic Lecture no.1</td>
<td>15</td>
<td>15</td>
<td>0</td>
<td>1.5</td>
<td>Exam</td>
</tr>
<tr>
<td>Monographic Lecture no.2</td>
<td>15</td>
<td>15</td>
<td>0</td>
<td>1.5</td>
<td>Exam</td>
</tr>
<tr>
<td>Monographic Lecture no.3</td>
<td>15</td>
<td>15</td>
<td>0</td>
<td>1.5</td>
<td>Grade</td>
</tr>
<tr>
<td>Specialization Laboratory I</td>
<td>120</td>
<td>0</td>
<td>120</td>
<td>10</td>
<td>Grade</td>
</tr>
<tr>
<td>Introduction to intellectual property management</td>
<td>15</td>
<td>15</td>
<td></td>
<td>1.5</td>
<td>Exam</td>
</tr>
</tbody>
</table>

**Total** 240 120 120 22

Subjects required to pass - selected by the student in consultation with the Scientific supervisor (laboratories from the list offered by the Faculty of Chemistry and available in English (English group)).

### Semester 3.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
<th>Lecture</th>
<th>Laboratory</th>
<th>ECTS points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master Seminar (oral presentation)</td>
<td>30</td>
<td>30</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>LabS II</td>
<td>250</td>
<td>0</td>
<td>250</td>
<td>20</td>
</tr>
</tbody>
</table>

**Total** 280 30 250 24

### Semester 4.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
<th>Lecture</th>
<th>Laboratory</th>
<th>ECTS points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master Seminar (Poster)</td>
<td>30</td>
<td>30</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>
Electives

Fall semester - List of classes

♦ Chemistry of bioelements – lecture; 2.0 ECTS
   prof. dr hab. Renata Bilewicz (bilewicz@chem.uw.edu.pl)

♦ Molecular modeling – lecture; 1,5 ECTS
   dr hab. Dominik Gront (dgront@chem.uw.edu.pl)

♦ Trace analysis of the organic pollutants in the environment; 3.0 ECTS
   prof. dr hab. Tomasz Gierczak (gierczak@chem.uw.edu.pl)

♦ Fundamentals of chemical technology and chemicals management – lecture and laboratory; 8.0 ECTS
   dr Hanna Wilczura-Wachnik (wilczura@chem.uw.edu.pl)

♦ Methods of pollution control and waste management – lecture and laboratory; 8.0 ECTS
   dr hab. Elżbieta Megiel (emegiel@chem.uw.edu.pl)

♦ Atomic spectrometry – lecture; 1,0 ECTS
   prof. dr hab. Ewa Bulska (ebulska@chem.uw.edu.pl)

♦ Principles of stereochemistry – lecture; 2,0 ECTS
   dr Anna Zawadzka (azawadzka@chem.uw.edu.pl)

♦ Organic chemistry – lecture; 4.5 ECTS
   prof. dr hab. Tomasz Bauer (tbauer@chem.uw.edu.pl)

♦ Advanced organic chemistry – lecture; 3,0 ECTS
   prof. dr hab. Tomasz Bauer (tbauer@chem.uw.edu.pl)

♦ Physical chemistry – laboratory; level A – 3.0 ECTS; level B – 6,0 ECTS
   dr Iwona Paleska (ipaleska@chem.uw.edu.pl)

♦ Physical chemistry – lecture; 3.0 ECTS
   prof. dr hab. Magdalena Skompska, prof. dr hab. Paweł Kryszański (mskomps@chem.uw.edu.pl, pakrys@chem.uw.edu.pl)

♦ Physicochemistry of new materials – lecture; 3.0 ECTS
   dr hab. Robert Szoszkiewicz, prof. UW (rszoszkiewicz@chem.uw.edu.pl)

♦ Practical application of Raman spectroscopy – lecture; 1,5 ECTS
   dr Agata Królikowska (akrol@chem.uw.edu.pl)
♦ Advanced techniques in infrared spectroscopy – lecture; 1,5 ECTS
dr hab. Barbara Pałys, prof. UW (bpalys@chem.uw.edu.pl)

♦ Marine microplastics: from the anthropogenic litter to the plastispher – lecture; 1,5 ECTS
dr Agnieszka Dąbrowska (adabrowska@chem.uw.edu.pl)

♦ General physics 1 – lecture and laboratory; 6,0 ECTS
dr hab. Robert Szoszkiewicz, prof.UW (rszoszkiewicz@chem.uw.edu.pl)

♦ „Nuclear chemistry” – laboratory; 2,0 ECTS
dr Anna Makowska (milew@chem.uw.edu.pl)

♦ Liquid Chromatography – laboratory; 3,5 ECTS
dr hab. Magdalena Biesaga (mbiesaga@chem.uw.edu.pl)

♦ Crystallography A – lecture; 1,0 ECTS; laboratory 2,0 ECTS
prof. dr hab. Michał K. Cyrański (mkc@chem.uw.edu.pl)

♦ Crystallography B – lecture; 3,0 ECTS; laboratory dr Anna Makal (amakal@chem.uw.edu.pl)
3,0 ECTS
prof. dr hab. Krzysztof Woźniak (kwozniak@chem.uw.edu.pl)

Spring semester – List of classes

♦ Liquid crystals – lecture; 1,5 ECTS
dr hab. Damian Pociecha (pociu@chem.uw.edu.pl)

♦ Ionic liquids – lecture; 1,5 ECTS
dr Anna Makowska (milew@chem.uw.edu.pl)

♦ Chemical kinetics and catalysis – lecture; 1,5 ECTS
prof. dr hab. Marek Orlik (morlik@chem.uw.pl)

♦ Computer aided drug design – lecture; 1,5 ECTS
prof. dr hab. Sławomir Filipek (sfilipek@chem.uw.edu.pl)

♦ Autooxidation and antioxidants – lecture; 1,5 ECTS
prof. dr hab. Grzegorz Litwinienko (litwin@chem.uw.edu.pl)

♦ Natural compounds and their impact on drug synthesis – lecture; 1,5 ECTS
dr Anna Zawadzka (azawadzka@chem.uw.edu.pl)

♦ Thermochemistry-physico-chemical properties of emulsions containing natural compounds –
lecture; 3,0 ECTS
dr Hanna Wilczura-Wachnik (wilczura@chem.uw.edu.pl)
Microemulsions of biologically active compounds – lecture; 1,5 ECTS
dr Hanna Wilczura-Wachnik (wilczura@chem.uw.edu.pl)

Specialization laboratory 1-inorganic and analytical chemistry – laboratory; 10,0 ECTS
dr hab. Rafał Jurczakowski (rafjur@chem.uw.edu.pl)

Organic chemistry – specialization laboratory; 10,0 ECTS
dr Elżbieta Winnicka (eboroda@chem.uw.edu.pl)

Metrology in chemistry – lecture; 2,0 ECTS
prof. dr hab. Ewa Bulska (ebulska@chem.uw.edu.pl)

Physical chemistry – laboratory; level A – 3,0 ECTS; level B – 6,0 ECTS
dr Iwona Paleska (ipaleska@chem.uw.edu.pl)

Introduction to intellectual property management – lecture; 1,5 ECTS
dr Marcin Strawski (marcin@chem.uw.edu.pl)

General physics 2 – lecture and laboratory; 8,0 ECTS
dr hab. Robert Szoszkiewicz, prof.UW (rszoszkiewicz@chem.uw.edu.pl)

Fundamentals of molecular spectroscopy A – laboratory; 2,0 ECTS
dr Beata Wrzosek (bwrzosek@chem.uw.edu.pl)

Fundamentals of molecular spectroscopy B – laboratory; 2,0 ECTS
dr Beata Wrzosek (bwrzosek@chem.uw.edu.pl)

Ionic liquid – lecture; 1,5 ECTS
dr Anna Makowska (milew@chem.uw.edu.pl)

Students can also choose subjects at other faculties of the University of Warsaw and the Warsaw University of Technology.