university of groningen

# Appendix for the Master's degree programme in Chemistry

# Appendix I. Learning outcomes of the degree programme (art. 3.1)

The objectives of the master's degree programme Chemistry are:

- to prepare students for an independent professional career; in this context this means being able to carry out fundamental or applied scientific research, as well as applying state of the art scientific knowledge in a wide variety of new practical situations,
- to make students develop skills, knowledge and insight in a specialization area of the field of study, with a focus on insight in and approach to scientific problems,
- to make students develop the ability to clearly and concisely communicate the acquired knowledge to others.

The objectives of the programme result in the following learning outcomes

**A. General academic skills for the master's degree programme Chemistry**

The graduate

A1. is able to keep up with and make use of professional literature in relevant subfields,
A2. is able to make themselves familiar with a subfield of the own discipline within a reasonable time span,
A3. is able to formulate a research plan based on a global problem description in a subfield of the own discipline,
A4. is able to analyze, interpret using state of the art information, and draw conclusions from research results,
A5. is able to operate effectively in a position in which knowledge and research skills within the field of the own discipline are required,
A6. is able to perform in a multidisciplinary team, transfer knowledge to others, give oral presentations, write a report or internationally accessible scientific article, and take part in a scientific discussion,
A7. is able to design, conduct and evaluate experiments and the necessary checks and balances independently,
A8. is able to relate their own results and conclusions to results already available in the literature,
A9. has sufficient understanding of the role of the own discipline in society to come to a well-considered choice and practice of profession,
A10. has an understanding of the role of their own discipline in a sustainable society.

**B. Specific academic knowledge and skills for the master's degree programme Chemistry.**

The graduate has advanced knowledge of aspects of pertinent fields of knowledge through a coherent* programme for example:

B1. Synthesis, characterization and properties of materials; the relation between chemical and physical properties of materials and the nature of the chemical bonding, and molecular structure.
B2. Reactions and interactions of molecules and the application of this insight in synthetic chemistry and catalysis as well as knowledge of sustainable chemistry.
B3. Behavior and design of biochemical systems and their functional properties. Synthesis in biology as well as protein engineering.

The graduate:

B4. is able to judge whether the properties of products prepared and possible side or waste products can result in undesired side effects in the short or long term,
B5. is able to work at an academic level on a research problem in an area of chemistry, which is not their own main field of study,
B6. (Science, business and policy track) is prepared for a professional career in management and policy.

*a coherent programme is defined as one which leads to specialisation in a pertinent field of chemistry in the opinion of the programme director.

# Appendix II. Tracks/specializations (art. 3.6)

The degree programme has the following tracks:

- Erasmus Mundus programme TCCM track
- Science, Business and Policy track
- Research and Education track
- Research track

The following specializations can be followed in the research track and the research and education track: Chemical biology, Synthesis & Catalysis, Supramolecular Chemistry, Organometallic chemistry, Theoretical chemistry and computational modelling, Solid state materials and sustainable energy, Protein biochemistry, Polymer Chemistry.

# Appendix III. Content of the degree programme (art. 3.7.1)

**Erasmus Mundus programme Theoretical Chemistry and Computational Modelling track (TCCM)**

The programme must comply with the Erasmus Mundus TCCM regulations. The mobility rules of the Erasmus Mundus TCCM apply. The programme of those students whose home university is the University of Groningen consists at least of the following course units:

| Course unit | Code | ECTS | Practical* | Entry requirements |
|---|---|---|---|---|
| Reaction Mechanisms | WMCH006-05 | 5 | | |
| Structure Determination with Spectroscopic Methods | WMCH008-05 | 5 | | |
| Molecular Quantum Mechanics | WMCH037-05 | 5 | | |
| Quantum Chemistry Methods I** | WMCH038-05 | 5 | | |
| Quantum Chemistry Methods II** | WMCH039-05 | 5 | | Molecular Quantum Mechanics |
| Topics in chemistry with Python | WMCH028-05 | 5 | | |
| Scientific Integrity | WMCH007-00 | 0 | | |
| Statistical Mechanics** | WMPH029-05 | 5 | | |
| Intensive Course TCCM*** | WMCH026-30 | 30 | | |
| Research Project TCCM** | WMCH902-30 | 30 | x | Reaction Mechanisms, Structure Determination with Spectroscopic Methods, Scientific Integrity |
| Colloquium | WMCH001-05 | 5 | | |
| Final Exam | WMCH002-05 | 5 | | Research Project TCCM |
| Electives** | | 15 | | |

* Practicals are defined as laboratory practicals
** Equivalent courses may be taken at the partner universities as part of the mobility programme.
*** taken in Toulouse and is part of the mobility programme

**Science, Business and Policy track**

| Course unit | Code | ECTS | Practical | Entry requirements |
|---|---|---|---|---|
| Reaction Mechanisms | WMCH006-05 | 5 | | |
| Structure Determination with Spectroscopic Methods | WMCH008-05 | 5 | | |
| Scientific Integrity | WMCH007-00 | 0 | | |
| Colloquium | WMCH001-05 | 5 | | Research Project Chemistry |
| Final Exam | WMCH002-05 | 5 | | Research Project Chemistry |
| Research Project in Chemistry | WMCH904-30 | 30 | x | Scientific Integrity |
| Introduction Science and Business | WMSE001-10 | 10 | | |
| Introduction Science and Policy | WMSE002-10 | 10 | | |

| | | | | |
|---|---|---|---|---|
| Work Placement Business and Policy | WMSE902-40 | 40 | x | Intr. to Science and Business, Intr. to Science and Policy |
| Electives in Chemistry | | 10 | | |

**Research and Education track**
More information about this track with a clear plan can be found in the student portal.

| Course unit | Code | ECTS | Practical | Entry requirements |
|---|---|---|---|---|
| Reaction Mechanisms | WMCH006-05 | 5 | | |
| Structure Determination with Spectroscopic Methods | WMCH008-05 | 5 | | |
| Scientific Integrity | WMCH007-00 | 0 | | |
| Colloquium | WMCH001-05 | 5 | | Master Research Project Chemistry |
| Final Exam | WMCH002-05 | 5 | | Master Research Project Chemistry |
| Master Research Project | WMCH901-40 | 40 | x | Reaction Mechanisms, Structure Determination with Spectroscopic Methods, submitting study programme, Scientific Integrity |
| Specialization courses | | 20 | | |
| Electives | | 10 | | |
| ***LVHO courses if Educational Minor not completed:*** | | | | |
| Neem regie | TEM0110-24 | 10 | | |
| Geef les | TEM0205-24 | 5 | | |
| Verken je schoolvak | TEM0315-24 | 15 | | |
| Vorm je visie | TEM0405-24 | 5 | | |
| Verdiep je schoolvak | TEM0515-24 | 15 | | |
| Onderzoek het leren | TEM0610-24 | 10 | | |
| ***LVHO courses if Educational Minor completed*** | | | | |
| Vorm je visie | TEM0405-24 | 5 | | |
| Verdiep je schoolvak | TEM0515-24 | 15 | | |
| Onderzoek het leren | TEM0610-24 | 10 | | |

Note: For the Research and Education track, the regulations of the "Lerarenopleiding" apply, as established in the TER of the "Lerarenopleiding".

**Research track**

| Course unit | Code | ECTS | Practical | Entry requirements |
|---|---|---|---|---|
| Reaction Mechanisms | WMCH006-05 | 5 | | |
| Structure Determination with Spectroscopic Methods | WMCH008-05 | 5 | | |
| Scientific Integrity | WMCH007-00 | 0 | | |
| Colloquium | WMCH001-05 | 5 | | Master Research Project Chemistry |
| Final Exam | WMCH002-05 | 5 | | Master Research Project Chemistry |

| | | | | |
|---|---|---|---|---|
| Master Research Project | WMCH901-40 | 40 | x | Reaction Mechanisms, Structure Determination with Spectroscopic Methods, submitting study programme, Scientific Integrity |
| Second research project* | WMCH903-20 | 20 | x | Master Research Project Chemistry |
| Specialization courses | | 20 | | |
| Electives | | 20 | | |

* The second research project should be performed in a different research group and topic in comparison to the master research project.

Students of the Research track are recommended to follow one of the specializations listed below. Students who wish to follow an open programme must adhere to the conditions described in appendix VIII.

**Recommended specializations** (see below for course codes, information and entry requirements)

| | |
|---|---|
| **Synthesis & Catalysis**<br><br>Chemical Catalysis<br>Organic Synthesis: Methods and Strategy 1<br><br>*and either:*<br>Advanced Biocatalysis<br>Organometallic Chemistry<br>*or*<br>Stereochemistry<br>Organic Synthesis: Methods and Strategy 2 | **Protein Biochemistry**<br><br>Advanced Biocatalysis<br>Synthetic Biology and Systems Chemistry<br><br>*And two of the following 4 courses:*<br>Molecular Modeling and Analysis in Structural Biology<br>Molecular Dynamics<br>Advanced Genetic Engineering<br>Next-generation Sequencing Methods and Data Analysis |
| **Chemical Biology**<br><br>Synthetic Biology & Systems Chemistry<br>Advances in Chemical Biology<br>Organic Synthesis: Methods and Strategy 1<br><br>*And one of the following 2 courses:*<br>Advanced Biocatalysis<br>Organic Synthesis: Methods and Strategy 2 | **Supramolecular Chemistry**<br><br>Supramolecular Chemistry<br>Bioinspired Designer Materials<br>Stereochemistry<br>Organic Chemistry: Methods and Strategy 1 |
| **Polymer Chemistry**<br><br>Bioinspired Designer Materials<br>Polymer Physics<br>Polymer Products<br>Physical Chemistry of Polymers: theory and practice | **Organometallic Chemistry**<br><br>Organometallic Chemistry<br>Advanced methods in Spectroscopy<br>Chemical Catalysis<br><br>Quantum Chemistry Methods I |
| **Theoretical Chemistry and Modelling**<br><br>Molecular Quantum Mechanics<br>Quantum Chemistry Methods I<br>Topics in Chemistry with Python | **Solid State materials and Sustainable energy**<br><br>Structure at Macro, Meso and Nanoscale<br>Properties of Functional Materials<br>Characterisation of Materials<br>Sustainable Electric Energy Storage |

| | |
|---|---|
| *And one of the following 2 courses:*<br>Quantum Chemistry Methods II<br>Statistical Mechanics | |

# Appendix IV. Electives (art. 3.8.1)

Students can request the board of examiners to be allowed to select a particular course outside the master in Chemistry programme.

| Course unit | Code | ECTS | Entry requirements |
|---|---|---|---|
| Biomaterials 2 | WMBE001-05 | 5 | |
| Molecular Dynamics | WMBS003-05 | | |
| Molecular Modeling and Analysis in Structural Biology (MMB) | WMBS021-05 | 5 | |
| Polymer Products | WMCE005-05 | 5 | |
| Advanced Biocatalysis | WMCH033-05 | 5 | |
| Molecular Quantum Mechanics | WMCH037-05 | 5 | |
| Skills in Science Communication | WMEC006-05 | 5 | |
| Protein and Enzyme Engineering | WMBS004-05 | 5 | |
| Advanced Genetic Engineering | WMBS006-05 | 5 | |
| Next-generation Sequencing Methods and Data Analysis | WMBS023-05 | 5 | |
| Interfacial Engineering | WMCE003-05 | 5 | |
| Processes and Products for a Sustainable Carbon Cycle | WMCE021-05 | 5 | |
| Bioinspired Designer Materials | WMCH009-05 | 5 | |
| Photovoltaics science and energy | WMCH011-05 | 5 | not open to students who already passed the Solar Cells (WBCH018-05) course |
| Stereochemistry | WMCH013-05 | 5 | |
| Organometallic Chemistry | WMCH018-05 | 5 | |
| Topics in Chemistry with Python | WMCH028-05 | 5 | |
| Photochem. and Photoredox catalysis | WMCH032-05 | 5 | |
| Advanced methods in Spectroscopy | WMCH042-05 | 5 | |
| Structure at Macro, Meso, Nano Scale | WMPH020-05 | 5 | |
| Design of Industrial Catalysts | WMCE009-05 | 5 | |
| Product Focussed Process Design | WMCE011-05 | 5 | |
| Advances in Chemical Biology | WMCH014-05 | 5 | |
| Chemical Catalysis | WMCH015-05 | 5 | |
| Organic Synthesis: Methods and | WMCH017-05 | 5 | |

| | | | |
|---|---|---|---|
| Strategy 1 | | | |
| Supramolecular Chemistry | WMCH020-05 | 5 | |
| Synthetic Biology & Systems chemistry | WMCH021-05 | 5 | |
| Sustainable Electric Energy Storage | WMCH029-05 | 5 | |
| Quantum Chemistry Methods I | WMCH038-05 | 5 | |
| Characterisation of Materials | WMPH021-05 | 5 | |
| Statistical Mechanics | WMPH029-05 | 5 | |
| Properties of Functional Materials | WMPH051-05 | 5 | |
| Astrochemistry | WMAS018-05 | 5 | |
| Organic Synthesis: Methods and Strategy 2 | WMCH024-05 | 5 | |
| Polymer Physics | WMCH025-05 | 5 | |
| Physical Chemistry of Polymers: theory and practice | WMCH034-05 | 5 | |
| Quantum Chemistry Methods II | WMCH039-05 | 5 | Molecular Quantum Mechanics |
| Biophysical Imaging & Manipulation Techn. | WMPH047-05 | 5 | |

# Appendix V. Entry requirements and compulsory order (art. 4.4)

Entry requirements are mentioned in tables appendices III and IV.

# Appendix VI. Admission to the degree programme (art. 2.1A.1, 2.1A.2 + 2.1B.1)

Students that successfully completed the Pre-Master programme are automatically admitted to the Master degree programme.

## 1. Application Procedure for selective master degree programmes

All candidates have to register in Studielink and upload the following documents before 1 May (start 1 September):

- Copy of ID card or passport
- Proof of English language proficiency
- Curriculum Vitae
- Official transcript of records
- Diploma of relevant Bachelor's degree programme (if not possible, provide reason)
- List of subjects/courses yet to be followed including course descriptions
- For non-UG students: clear description of content/learning objectives of all required courses
- List of extracurricular activities
- Complete Checklist

After candidates have completed their registration in Studielink, applications will be processed in the following way:

For holders of a Dutch BSc diploma:

- Admission Support FSE compiles the individual selection file
- Admission Support FSE submits the individual selection file to the Admissions Board of the individual programme

For holders of a non-Dutch BSc diploma:

1. Admissions Office compiles the individual selection file
2. Admissions Office validates individual Bachelor's degree diploma
3. Admissions Office submits the individual selection file to the SSE
4. SSE submits the individual selection file to Admissions Board of the individual programme

## 2. Selection procedure

In order to select the appropriately suited and motivated students, the Admission Board requires a complete selection file from all candidates. The Admission Board of the individual programmes will review all individual applicants based on their selection file. All candidates that have an appropriate background will be considered admissible and further considered for the selection procedure described below.

At least two members of the Admissions Board score the selection criteria. If the scores on the academic performance, extracurricular activities and/or the motivation deviate 1 point or more, all

members of the admissions board will review the application, after which they score a second time. This outcome constitutes the final score. Candidates with a total score of 5 or greater will be admitted to the programme.

## 2.1. Admissibility

The appropriateness of the background level will be assessed by the Board of Admissions and must be of sufficient basis for participation in the MSc Chemistry programme. The Board of Admissions considers.

- **Relevance and affiliation/fit** of the bachelor programme followed to the master programme (list of subjects/courses followed and grades obtained; brief description of the content of key subjects/courses demonstrating the knowledge and skill(s) acquired by the student[1]).

[1] *Key subjects/courses, the nature of the knowledge and relevant skill(s) are defined by the Programme director in consultation with the Programme committee, and are approved by the Programme Board.*

- **Dutch BSc Chemistry degree**
  Applicants are automatically considered 'admissible' if they hold a BSc Chemistry degree from the University of Groningen, if they have followed successfully the UG chemistry pre-Master programme, if they hold a BSc degree in chemistry from the University of Leiden, University of Utrecht, University of Amsterdam, the Free University Amsterdam (VU), or the Radboud University - Nijmegen.
- **University of Groningen BSc LST degree**
  Applicants with a BSc LST degree from the University of Groningen are admissible to the MSc Chemistry, when they have completed the below mentioned courses (all required):
  - Electrochemical Technology (WBCE021 -05)
  - Synthesis 2 lab course (WBCH008-05)
  - Physical Chemistry 2 (WBCH015-05)
  - Soft Molecular Materials (WBCH017 -05)
  - Research Practical (WBCH070-05)
  - (Bio)Catalysis (WBCH019-05)
  - Physical Organic and photochemistry (WBCH027-05)
  - Bachelor Research Project Chemistry (WBCH901-15)
- **Students with a BSc degree not in the first two categories will be considered on a case by case basis** including a verification of transcript and course content description, with a minimum requirement for a core programme (with learning outcomes equivalent to the following courses in the BSc Chemistry programme of the UG (6 out of the following 7 courses are required) Students that do not fulfill these requirements might be offered a pre-master programme instead (see Appendix VII)
  - Organic Chemistry 1
  - Organic Chemistry 2
  - Physical Chemistry
  - Physical Chemistry 2
  - Spectroscopy
  - Inorganic Chemistry
  - Biochemistry

  - and proven practical skills and research experience (obtained via a basic research project).

***Practical implementation of the admissibility check***

The check for MSc Chemistry admissibility is performed by two BoA members per submission round. In case of doubt, the BoA chair reviews the file, and makes a decision, for which advice from the Programme Director may be obtained.

### 2.2. Selection

**1. Weighted average of grades ≥7**
Dutch degrees: When the weighted average of grades amount to 7 or higher, a fixed amount of 4 points is awarded.
Non-Dutch degrees: Students have to provide their weighted average grade and information about the grading system at their host institution. The Board of Admissions reserves the right to assess this information on a case-by-base basis, and reach a conclusion about the value of the weighted grade, and will award 4 points if the provided information proves a similar grade level. The Board of Admissions may seek advice from international colleagues.

**2. Motivation**
The applicant is awarded 2 points for each excellent answer, 1 point for each satisfying answer, or 0 points if the answer is not sufficient.
In case a specific motivation is not covered in the predefined list, the BoA members will together discuss the scoring of this answer, and note it in the scoring sheet.

**3. Extracurricular activities**
Points can be awarded for activities that showcase exceptional involvement, to a maximum of 5 points.
In case a specific activity is not covered in the predefined list, the BoA members will together discuss the scoring of this answer, and note it in the scoring sheet.

### *Practical implementation of the selection process*

1. Two BoA members check the average weighted grades ≥ 7 of the updated grades list, and note this in the Mastersheet.

2. Two BoA members together score all three questions for each applicant. When an answer is not listed, or there is a disagreement on the scoring between the two BoA members, the file is flagged and discussed at the next BoA meeting.

3. Two BoA members assess the extracurricular activities with an exhaustive list of pre-defined activities. When an activity is not on the list, or there is a disagreement on the scoring between the two BoA members, the file is flagged and discussed at the next BoA meeting. The total scores are noted in the Master sheet,

## 3. Timeline for the application and selection procedure

The application process for the programme starting on September 1st will commence on October 1st of the preceding year and conclude on May 1st of the same academic year. During October, comprehensive details regarding the application process will be made available on the Admission and Application website specific to the respective Master's degree programme.

After registration in Studielink, all candidates will receive an email with an overview of the application procedure, the deadlines and instructions on how to proceed.
After candidates have successfully submitted all necessary documents the School of Science and Engineering (for holders of a Dutch BSc diploma,) or the Admissions Office (for holders of a non-Dutch BSc diploma) will send the candidate a confirmation of receipt.
The Board of Admissions will assess and score the applications out of a total of 15 points over the three selection criteria: (i) average weighted grade, (ii) motivation, and (iii) extracurricular activities.

(i) An average weighted grade for bachelor courses of 7 or greater will earn 4 pts
(ii) The motivation table is comprised of 3 questions each of which can earn 2 pts
(iii) Extracurricular activities, contingent on sufficient evidence provided, attract either 0.5 or 1 pt each to a maximum of 5 pts

**A minimum score of 5 points is needed for direct admission to the MSc Chemistry.**
Admission is always conditional on obtaining a BSc degree or completing the pre-master programme before the MSc Chemistry start date.
The motivation table comprises of three questions:

| **Question** | **Consider including the following aspects** |
|---|---|
| 1. What specific aspects of the Master's programme in Chemistry at the University of Groningen motivated you to apply? | Specific courses and specialisations, research activities/groups, your experience during your BSc degree |
| 2. How has your previous education prepared you for our research-focused Master's degree in Chemistry? Be sure to include how research projects or other relevant experiences contribute to your motivation. | Practical courses, research projects, educational activities tailored towards your preferred track |
| 3. Why do you want to obtain a Master's degree in Chemistry? For example, list any concrete plans you have for after graduation. | Concrete ideas about next position (industry, academia, field), or efforts to arrive at a concrete plan |

The Board of Admissions will offer places to candidates who score a total of 5 points of more. Candidates who are not selected can lodge a written appeal against this decision within six weeks of the date of sending, with the Board of Appeal for Examinations, P.O. Box 72, 9700 AB Groningen, the Netherlands.
The admission to the programme is only valid for the academic year following the application date. Students who are offered a place for an academic year have to accept or decline the place before August 31 preceding that academic year. Students who accept the offer need to be enrolled before September 1 of that academic year.

# Appendix VII. Pre-master programmes and Fast-Track programmes (Art. 2.3)

1. FSE offers a pre-defined Pre-Master's programme of *45 EC* for access to the MSc Chemistry and individually determined Pre-Master's programmes. The overview below shows:
   - which NVAO-accredited HBO diploma grants access to the MSc Chemistry upon completion of the Pre-Master's programme
   - The content and student workload for these fixed programmes.

   a. Bachelor Chemistry (croho/rio-code 34396)

| **Semester** | **Course Title** | **Course Code** | **ECTS** |
|---|---|---|---|
| 1a | Organic Chemistry 2 | WBCH005-05 | 5 |
| 1a | Maths for Chemistry and Engineering | WBCH048-05 | 5 |
| 1b | Physical Chemistry 2 | WBCH015-05 | 5 |
| 1b | Carbohydrates<br>*or*<br>Macromolecular Chemistry | WBCH010-05<br>or<br>WBCH023-05 | 5 |
| 2a | Biochemistry | WBCH064-05 | 5 |
| 2a | Physical Organic chemistry and Photochemistry | WBCH027-05 | 5 |

| | | | |
|---|---|---|---|
| 2b | Spectroscopy | WBCH044-05 | 5 |
| 2b | Inorganic Chemistry | WBCH039-05 | 5 |
| 2b | Quantum Chemistry | WBCH029-05 | 5 |
| **Total** | | | 45 |

- Starting date(s) 1 September

2. For HBO programmes not listed above and for students with a BSc degree that are not directly admissible to the MSc, the Board of Admissions decides:
    a. The content and the student workload of a tailormade Pre-Master's programme.
    or
    b. Admission is not accepted.

3. For selective masters, pre-master's students are selected on the basis of the following selection criteria and selection procedure:

## Application Procedure for Pre-Master's programme

All candidates have to register in Studielink and upload the following documents before 1 May (start 1 September):

- Copy of ID card or passport
- Curriculum Vitae
- Official transcript of records
- Diploma or statement of graduation of relevant NVAO-accredited HBO programme (if not obtained yet, expected graduation date)
- List of subjects/courses yet to be followed including course descriptions
- For non-UG students: clear description of content/learning objectives of all required courses
- List of extracurricular activities
- Complete Checklist

After candidates have completed their registration in Studielink, applications will be processed in the following way:

- Admission Support FSE compiles the individual selection file
- Admission Support FSE submits the individual selection file to the Admissions Board of the individual programme

## Selection procedure

In order to select the appropriately suited and motivated students, the Admission Board requires a complete selection file from all candidates. The Admission Board of the individual programmes will review all individual applicants based on their selection file. All candidates that have an appropriate background will be considered admissible and further considered for the selection procedure described below.

At least two members of the Admissions Board score the selection criteria. If the scores on the academic performance,support letter and/or the motivation deviate 1 point or more, all members of the admissions board will review the application, after which they score a second time. This outcome constitutes the final score. Candidates with a total score of 3.5 or greater will be admitted to the programme.

## Admissibility

The appropriateness of the background level will be assessed by the Board of Admissions and must be of sufficient basis for participation in the MSc Chemistry programme. The Board of Admissions considers.

- **Relevance and affiliation/fit** of the bachelor programme followed to the master programme (list of subjects/courses followed and grades obtained; brief description of the content of key subjects/courses demonstrating the knowledge and skill(s) acquired by the student[1]).

[1] *Key subjects/courses, the nature of the knowledge and relevant skill(s) are defined by the Programme director in consultation with the Programme committee, and are approved by the Programme Board.*

- **NVAO-accredited HBO diploma of the croho/rio code 34396**
  Applicants are automatically considered 'admissible' for the pre-master.
- **Students with another NVAO-accredited HBO diploma or a BSc degree that does not allow direct admission to the MSc chemistry will be considered on a case by case basis** including a verification of transcript and course content description, with a minimum requirement for a core programme containing (4 out of the following 5 topics are required)
  - Organic Chemistry 1
  - Physical Chemistry
  - Spectroscopy
  - Inorganic Chemistry
  - Biochemistry

***Practical implementation of the admissibility check***

The check for the Pre-Master programme admissibility is performed by two BoA members per submission round. In case of doubt, the BoA chair reviews the file, and makes a decision, for which advice from the Programme Director may be obtained.

## Selection

Selection overall score should be at least 3.5 points.

**1. Weighted average of grades ≥7 overall**
When the weighted average of grades amount to 7 or higher overall a fixed amount of 3 points is awarded. When the average grade is between 6.5-7 a fixed amount of 2 points is awarded.

If you have an average grade lower than 7 for overall average, you may supply a support letter from the degree awarding HBO programme. Points can be awarded for support letters that showcase exceptional fit of the applicant with the MSc Chemistry programme at the University of Groningen, to a combined maximum of 3 points for criteria 1 and 2.
**2. Motivation by the applicant**
The applicant is awarded 1 point for each satisfying answer, or 0 points if the answer is not sufficient with a maximum of 3 points. In case a specific motivation is not covered in the predefined list, the BoA members will together discuss the scoring of this answer, and note it in the scoring sheet.
**3. Extracurricular**
Extracurricular activities, contingent on sufficient evidence provided, attract either 0.5 or 1 pt each to a maximum of 3 pts.

Under exceptional circumstances, or unclear/incomplete applications, the BoA has the option to request additional information.

| **Question** | **Consider including the following aspects** |
|---|---|
| 1. What specific aspects of the Master's programme in Chemistry at the University of Groningen motivated you to apply for the Pre-Master? | Specific courses and specialisations, research activities/groups, your experience during your BSc degree |

| | |
|---|---|
| 2. How has your previous education prepared you for our research-focused Master's degree in Chemistry? Be sure to include how research projects or other relevant experiences contribute to your motivation. | Practical courses, research projects, educational activities tailored towards your preferred track |
| 3. After your HBO degree, why do you want to continue studying for a Master's degree in Chemistry? For example, list any concrete plans you have for after obtaining your MSc studies. | Concrete ideas about next position (industry, academia, field), or efforts to arrive at a concrete plan |

### *Practical implementation of the selection process*

1. Two BoA members check the average weighted grades, and note this in the Mastersheet.

2 Two BoA members assess the support letter of HBO describing the suitability of the candidate, and score this on the basis of predefined criteria. When there is a disagreement on the scoring between the two BoA members, the file is flagged and discussed at the next BoA meeting. The total scores are noted in the Master sheet,

3. Two BoA members together score all three questions for each applicant. When an answer is not listed, or there is a disagreement on the scoring between the two BoA members, the file is flagged and discussed at the next BoA meeting.

## Timeline for the application and selection procedure

The application process for the Pre-Master programme starting on September 1st will commence on October 1st of the preceding year and conclude on May 1st of the same academic year. During October, comprehensive details regarding the application process will be made available on the Admission and Application website specific to the respective Pre-Master's programme.

After registration in Studielink, and filing an admission request with the Board of Admission, the School of Science and Engineering (for holders of a Dutch BSc diploma,) will send the candidate a confirmation of receipt.
The Board of Admissions will assess and score the applications out of a total of 9 points over the three selection criteria: (i) average weighted grade, (ii) motivation and (iii) extracurricular.

(i) An average weighted grade for bachelor courses of 7 or greater will earn 3 pts.
(ii) The motivation table is comprised of 3 questions each of which can earn 1 pt
(iii) Extracurricular activities with a maximum of 3 points

**A minimal score of 3.5 points is needed for direct admission to the Pre-Master programme.** Admission is always conditional on obtaining a NVAO accredited HBO diploma.

## B. Fast-Track programmes

*The MSc degree programme does not offer Fast-Track programmes.*

# Appendix VIII. Transitional provisions (art. 7.1)

| | | |
|---|---|---|
| Basiscursus lerarenopleiding (TEM0105) | Neem Regie (TEM0110-24) i | Curriculum change lerarenopleiding |
| Masterstage 1 (TEM0205) | Neem Regie (TEM0110-24) wpl | Curriculum change lerarenopleiding |

| | | |
|---|---|---|
| Vakdidactiek 1 (TEM0505) | Geef les (TEM0205-24) + Verken je schoolvak (TEM0315-24) i | Curriculum change lerarenopleiding |
| Masterstage 2 (TEM0315) | Verken je schoolvak (TEM0315-24) wpl | Curriculum change lerarenopleiding |
| Physical Methods for Chemical Analysis (WMCH012-05) | Advanced methods in Spectroscopy (WMCH042-05) | Name change to better reflect the content of the course |

*i = internal, wpl = werkplek*

# Appendix IX. Additional Requirements Open degree Programmes (art. 3. 9.2)

Students intending to pursue an open programme must submit their programme for approval, ensuring it demonstrates coherence and sufficiently covers the Learning Outcomes of the Masters Chemistry programme.

Students who wish to follow an open programme must contact the Programme Director within the first 6 months of their MSc registration, to prepare an application for their programme which has to be submitted for approval to the Board of Examiners.

The Board of Examiners will approve the open degree programme if the proposed programme:

- adequately covers the Learning Outcomes of the Master Chemistry
- demonstrates clear overall coherence