Water Technology
2022-2023

JULY 2022
ACADEMIC YEAR 2022-2023
**Education academic year 2022-2023**

*How to start the academic year*

We advise you to come to Leeuwarden before the upcoming academic year and to find a student room in the city of Leeuwarden. Please take into account any COVID-19 regulations that apply when travelling from your country to the Netherlands. You can find information about travelling to the Netherlands and COVID-19 on [https://www.government.nl/](https://www.government.nl/)

The new academic year starts on September 5 (the introduction will start on the 29th of August) and we are looking forward to meeting all our new students, from the Netherlands and abroad. The classroom of the Wetsus Academy is located in the building of Wetsus (Oostergoweg 9, 8911 MA Leeuwarden), where also other companies are located. The classroom is on the 3rd floor of the building (room 3.04).

*Practical information with regard to the programme*

The academic year starts on September 5, 2022. The calendar below illustrates the dates with classes, interim examinations, re-sits and Holidays.

As a student Water Technology, you do not have to register for courses with a XWT-code, examinations and re-sits in Osiris. This registration will be done centrally, because of our different scheduling compared to the other programmes of Wageningen University.

The lecturers submit all students in the class list of their course in BrightSpace (= learning environment). Afterwards, students have access to the course information in BrightSpace.
The periods 1, 2 and 3 consist of 10 weeks each. During the first 8 weeks, three courses are taught in parallel. After the third period, a free week gives students a break before starting the last two courses of period 4. These courses are scheduled one after the other and do not have a written examination.

The programme starts with the course Water Technologies in Global Context (5 credits) in which students explore the global challenges in an international context. The main societal challenge to accommodate the growing world population with sufficient clean water one can no longer just focus on producing more water but should consider this challenge within the broader framework of growing scarcity of materials, energy and its associated pollution, also in relation to the type of country: low-income, emerging-income and high-income countries.

Subsequently, the programme continues with four courses (20 credits). These courses reflect on the multidisciplinary character of the current developments within the domain of water technology, and students specialise in scientific knowledge of various relevant disciplines. The focus is on scientific knowledge of natural and physical theories and on research applications in the overlap areas of two or more disciplines. These courses include a compulsory course on Colloid Chemistry and at least two
compulsory courses, selected from Transport Phenomena, Physical Chemistry, and Water Microbiology, depending on the educational background of the student.

The learning pathway continues with four courses (20EC) in water engineering. The central topic is the integration of water treatment & recovery concepts to design reactors for chemical and biological processes.

Students apply acquired knowledge and understanding of the previous courses to start the design of new technologies and they learn to produce the best solution for a certain problem. Topics are in the field of conversions and reactor selection, reactor design and membrane science.

Two compulsory courses complete the learning pathway and first year, one with a focus on process dynamics and modelling reactors and reactor networks (5 credits), and one design-oriented project of 10 credits in which students work in teams on the development of a business case. In this part, called sustainable technology, students learn how to integrate the results from the engineering part in the context of society and business and encounter the complexity in practice. Theory will be linked to real-world cases.

The second year consists of a compulsory thesis, which reflects a student’s research project at the Wetsus Lab supervised by a PhD-student (daily) and his/her supervisor, lasting typically 7 months (40 credits). In the rest of the year, students complete a compulsory academic internship (20 credits). During the thesis and internship, students get individual supervision. Students acquire advanced knowledge, skills and attitudes in the domain of water technology and more specifically in the field of their chosen thesis topic.
They acquire professional and academic competences at a master’s level by executing a thesis research project independently; including the development of a research proposal for their thesis research. In the *Study Handbook 2022-2023* you find more details on a specific course.

**Literature review**

A literature review is part of the examination of the course Water Technologies in Global Context. Students have to use the software Mendeley for managing your references. On the Wageningen website you find more information. In the digital library of the Wageningen University you find *Mendeley* instruction material. The digital library of the Wageningen University also supports students in finding scientific literature, on using citing and reference management tools. The library also provides e-learning modules on e.g. information literacy. We advise you to use the tools offered by the library for self-study and refreshment of your skills.

**Computer practicals**

The master programme Water Technology knows some computer assignments from the second educational period on. The teachers use software *Matlab* within three courses (Colloid Chemistry, Multi-component mass transfer in membrane processes and Computational Methods in Water Technology), and Mathcad in one course (Bioreactor design), they will inform you which version you have to download in due time. We advise you to check if your laptop meets the *minimum laptop requirements* to participate in our online education as well as on-site computer practical’s. As a (future) Wageningen University student, you can receive a discount on purchasing a laptop at the *LaptopShop*. You can pick it up on campus or ask to send it to your address in the Netherlands.
These devices meet all the requirements to ensure you are ready for your studies.

Study books
The programme prescribes four study books (see table on this page), which you can buy/order in several bookstores or online. In the Netherlands, you can order most books online via www.bol.com (put the given number in the search bar).

Below you find a table with the course name and the title and ISBN-number of the study book. The courses transport phenomena, physical chemistry and water microbiology are compulsory for students with a bachelor diploma of a Dutch Applied University. In consultation with the study advisor, students with an academic bachelor degree can be given the opportunity to replace these courses by other course (electives). This depends on the already acquired knowledge in one of these fields. All students will get a personal meeting to discuss these opportunities before the start of the programme.

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<th>Course</th>
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<td>Transport Phenomena</td>
<td>Transport Phenomena, the Art of Balancing</td>
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<td></td>
<td>Harry van den Akker, Robber F. Mudde, 1st edition 2014</td>
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<td>Michael T. Madigan, Jennifer Aiyer, Daniel Buckley, W. Sattley, David Stahl, Pearson Education Limited</td>
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<td>Multi-component mass transfer in membrane processes</td>
<td>Mass transfer in Multicomponent Mixtures J.A. Wesselingh and R. Krishna, VSSD 9789071301582</td>
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