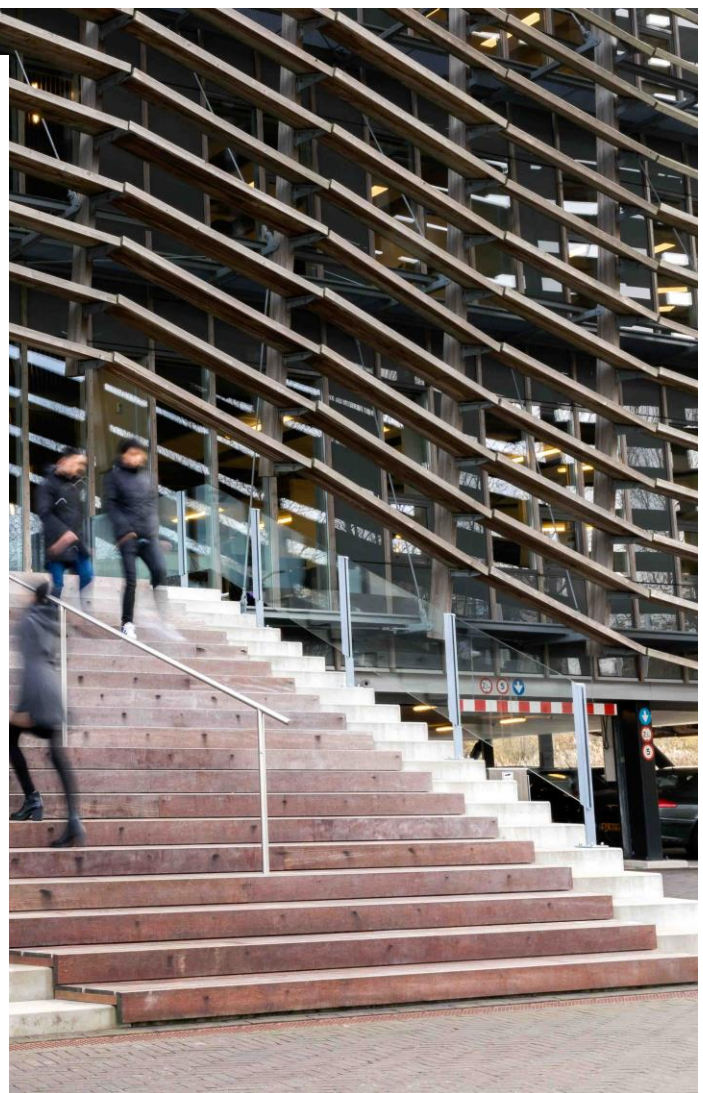


Water Technology 2022-2023



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/>

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.

MWT ACADEMIC YEAR 2022 - 2023

Academic week Calendar week	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	1	2	3	4
Monday	23-aug	5-sep	12-sep	19-sep	26-sep	3-okt	10-okt	17-okt	24-okt	31-okt	7-nov	14-nov	21-nov	28-nov	5-dec	12-dec	19-dec	26-dec	2-jan	9-jan	16-jan	23-jan
Tuesday	30-aug	6-sep	13-sep	20-sep	27-sep	4-okt	11-okt	18-okt	25-okt	1-nov	8-nov	15-nov	22-nov	29-nov	6-dec	13-dec	20-dec	27-dec	3-jan	10-jan	17-jan	24-jan
Wednesday	31-aug	7-sep	14-sep	21-sep	28-sep	5-okt	12-okt	19-okt	26-okt	2-nov	9-nov	16-nov	23-nov	30-nov	7-dec	14-dec	21-dec	28-dec	4-jan	11-jan	18-jan	25-jan
Thursday	1-sep	8-sep	15-sep	22-sep	29-sep	6-okt	13-okt	20-okt	27-okt	3-nov	10-nov	17-nov	24-nov	1-dec	8-dec	15-dec	22-dec	29-dec	5-jan	12-jan	19-jan	26-jan
Friday	2-sep	9-sep	16-sep	23-sep	30-sep	7-okt	14-okt	21-okt	28-okt	4-nov	11-nov	18-nov	25-nov	2-dec	9-dec	16-dec	23-dec	30-dec	6-jan	13-jan	20-jan	27-jan
	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Monday	30-jan	6-feb	13-feb	20-feb	27-feb	6-mrt	13-mrt	20-mrt	27-mrt	3-apr	10-apr	17-apr	24-apr	1-mei	8-mei	15-mei	22-mei	29-mei	5-jun	12-jun	19-jun	26-jun
Tuesday	31-jan	7-feb	14-feb	21-feb	28-feb	7-mrt	14-mrt	21-mrt	28-mrt	4-apr	11-apr	18-apr	25-apr	2-mei	9-mei	16-mei	23-mei	30-mei	6-jun	13-jun	20-jun	27-jun
Wednesday	1-feb	8-feb	15-feb	22-feb	1-mrt	8-mrt	15-mrt	22-mrt	29-mrt	5-apr	12-apr	19-apr	26-apr	3-mei	10-mei	17-mei	24-mei	31-mei	7-jun	14-jun	21-jun	28-jun
Thursday	2-feb	9-feb	16-feb	23-feb	2-mrt	9-mrt	16-mrt	23-mrt	30-mrt	6-apr	13-apr	20-apr	27-apr	4-mei	11-mei	18-mei	25-mei	1-jun	8-jun	15-jun	22-jun	29-jun
Friday	3-feb	10-feb	17-feb	24-feb	3-mrt	10-mrt	17-mrt	24-mrt	31-mrt	7-apr	14-apr	21-apr	28-apr	5-mei	12-mei	19-mei	26-mei	2-jun	9-jun	16-jun	23-jun	30-jun
	44	45	46	47	48	49	50	51														
	27	28	29	30	31	32	33	34														
Monday	3-jul	10-jul	17-jul	24-jul	31-jul	7-aug	14-aug	21-aug														
Tuesday	4-jul	11-jul	18-jul	25-jul	1-aug	8-aug	15-aug	22-aug														
Wednesday	5-jul	12-jul	19-jul	26-jul	2-aug	9-aug	16-aug	23-aug														
Thursday	6-jul	13-jul	20-jul	27-jul	3-aug	10-aug	17-aug	24-aug														
Friday	7-jul	14-jul	21-jul	28-jul	4-aug	11-aug	18-aug	25-aug														

Classes
Interim examinations
Re-sits previous period
(Public) Holidays
Introduction week

Set-up of the programme

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.

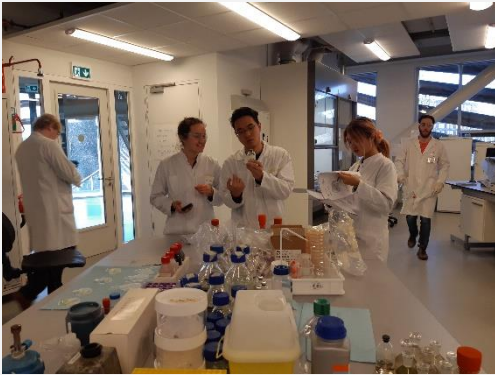
The learning pathway continues with four courses (20EC) in water engineering. The central topic is the integration of water treatment & recovery concepts to design reactors for chemical and biological processes.



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.

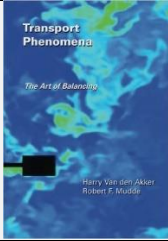
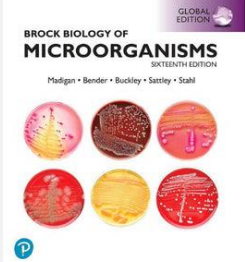
These devices meet all the requirements to ensure you are ready for your studies.



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.

Course	Study book	Layout
Transport Phenomena	Transport Phenomena, the Art of Balancing Harry van den Akker, Robber F. Mudde, 1 st edition 2014 9789065623584	
Water Microbiology	Brock Biology of Microorganisms, Global Edition 16 th edition Michael T. Madigan, Jennifer Aiyer, Daniel Buckley, W. Sattley, David Stahl, Pearson Education Limited 9781292404790	

<p>Multi-component mass transfer in membrane processes</p>	<p>Mass transfer in Multicomponent Mixtures J.A. Wesselingh and R. Krishna, VSSD 9789071301582</p>	
<p>Biological water treatment & recovery technology</p>	<p>Wastewater Engineering, Treatment and Resource Recovery Metcalf & Eddy 5th edition, McGraw – Hill International Edition 9781259010798</p>	