

MSc Chemical Engineering - TU Delft

Master's Courses for Exchange Students

The course package proposals presented here were composed considering the coherence of their contents. Although an overlap between lectures and exams of the courses within the same package is not likely, it may occur due to unforeseen circumstances leading to schedule modifications. The course package proposals are intended for MSc students and students who are in the process of finalising their BSc programme.

Please read the courses' prerequisites [here](#) in order to determine whether the courses you select are a good fit for your educational background (note: for the description of WM0320TU, select '--all--' from the drop-down list of 'Organization').

Fall semester 2023

Q1 Core Chemical Engineering Courses						
Identifier	Course Name	Credits	Period			
			1	2	3	4
CH3044A	Process Dynamics & Control (PD&C) <i>Required prior knowledge → Basic knowledge of industrial process equipment for heat transfer, separation and chemical reaction. Knowledge of calculus, linear algebra, complex numbers, numerical techniques like integration and their implementation in Python.</i>	4 ECTS				
CH3153	Molecular Transport Phenomena <i>Required prior knowledge → BSc: Transport Phenomena (4052FYSTRY), Physical Chemistry (4052FYSCKY), Thermodynamics (4051CHTHEY and 4052STATHY), Calculus I and II (4051CALC1Y and 4051CALC2Y), Statistical methods (4052STAMEY), Differential Equations (4052LADIFY).</i>	4 ECTS				
TPM330	Ethics & Risks <i>Required prior knowledge → No prerequisites.</i>	4 ECTS				

Q2 Advanced Chemical Engineering Courses						
Identifier	Course Name	Credits	Period			
			1	2	3	4
CH3051	Applied Transport Phenomena (ATP) <i>Required prior knowledge → Basic knowledge of ANM (Applied Numerical Mathematics).</i>	4 ECTS				
CH3682A	Reactors and Kinetics (R&K) <i>Required prior knowledge → Chemical Reactors.</i>	4 ECTS				
CH3143	Advanced Thermodynamics <i>Required prior knowledge → Physical Chemistry, Thermodynamics, Calculus and Numerical Analysis at bachelor level of chemical engineering. Notions of statistical thermodynamics (origin and meaning of entropy at microscopic level) and very basic notions of quantum mechanics.</i>	4 ECTS				
CH3013	Interfaces and Particles <i>Required prior knowledge → Basic knowledge on physical-chemistry.</i>	4 ECTS				
CH3175	Solid State Materials <i>Required prior knowledge → Basic knowledge of quantum mechanics and of physical chemistry.</i>	4 ECTS				
CH3373	Soft Materials Engineering <i>Required prior knowledge → Basic knowledge on physical-chemistry.</i>	4 ECTS				

Offered throughout Q1 & Q2 (3 EC per quarter)						
Identifier	Course Name	Credits	Period			
			1	2	3	4
CH3133	Computational Practicum <i>Required prior knowledge →</i> - Bachelor level linear algebra: vector, matrix, linear mapping, basis vectors, solving linear systems, computing eigenvalues and eigenvectors, application of linear algebra - Bachelor level calculus: differentiation and integration of a function in one and more variables, complex numbers, analytical methods for ordinary and partial differential equations, Fourier transformation, applications of calculus - Bachelor level computer programming: elementary instructions, conditional statements and loops, functions and main program	6 ECTS				

Optional, to be organized throughout Q1 & Q2 (15 EC in total)						
Identifier	Course Name	Credits	Period			
			1	2	3	4
CH3991	Research Project**	15 ECTS				

The offer for semester 2, Spring 2024 will change, this is just an example. An update will follow as soon as possible.

Spring semester 2023

Energy and Sustainability (compose a package of 30 EC)						
Identifier	Course Name	Credits	Period			
			1	2	3	4
CH3222	Energy Storage in Batteries	4 ECTS				
CH3513	Electrochemistry for Renewable Energy	4 ECTS				
CH3632	Chemistry and Physics of Solar Cells	6 ECTS				
CH3101	Heterogeneous Catalysis	3 ECTS				
WM0320TU + AS3131	Ethics & Engineering + Art, Empathy & Ethics (application required)	7 ECTS				
CH3982	Literature Study	3 ECTS				
CH3991	Research Project**	15ECTS				

Chemical Process Engineering (compose a package of 30 EC)						
Identifier	Course Name	Credits	Period			
			1	2	3	4
CH3061	Multiphase Reactor Engineering	4 ECTS				
CH3073	Separation Processes, Design and Operation	3 ECTS				
CH3181	Scale Up / Scale Down	3 ECTS				
CH3421	Computational Transport Phenomena	6 ECTS				
CH3622	Process Intensification	3 ECTS				
CH3672	Computational Materials Science	3 ECTS				
WM0320TU + AS3131	Ethics & Engineering + Art, Empathy & Ethics* (application required)	7 ECTS				
CH3982	Literature Study	3 ECTS				
CH3991	Research Project**	15ECTS				

Nuclear Science (compose a package of 30 EC)						
Identifier	Course Name	Credits	Period			
			1	2	3	4
CH3763	Nuclear Medicine	3 ECTS				
CH3783	Materials Chemistry for the Nuclear Fuel Cycle	3 ECTS				
CH3771	Nuclear Chemistry	6 ECTS				
WM0320TU + AS3131	Ethics & Engineering + Art, Empathy & Ethics* (application required)	7 ECTS				
CH3982	Literature Study	3 ECTS				
CH3991	Research Project**	15ECTS				

Chemical Products and Design(compose a package of 30 EC)						
Identifier	Course Name	Credits	Period			
			1	2	3	4
CH3531	Functional Ceramics	3 ECTS				
CH3563	Product and Process Engineering of Solid Particles	3 ECTS				
CH3101	Heterogeneous Catalysis	3 ECTS				
WM0320TU + AS3131	Ethics & Engineering + Art, Empathy & Ethics* (application required)	7 ECTS				
CH3982	Literature Study	3 ECTS				
CH3991	Research Project**	15 ECTS				

* Art, Empathy & Ethics (AS3131) can only be taken in combination with Ethics & Engineering (WM0320TU). Please see the Art, Empathy & Ethics (AS3131) course description via [this link](#).

Please note that AS3131 requires admission by the course manager, Dr Eduardo Mendes. To request admission, please send your APPLICATION LETTER explaining your motivation (max 1/2 an A4 sheet) to e.mendes@tudelft.nl.

- DEADLINE APPLICATION: TWO WEEKS BEFORE the start of the semester
- The subject line of your email should read 'Enrolment application for AS3131'
- The responsible instructor will enrol you and you will receive a notification of enrolment by email.

**** A Research Project** (of 15 ECTS) at one of our groups within the Faculty of Applied Sciences.

It is possible to combine the research project with courses. The larger the project, the more chance to be accepted by the department. The course code of the Research project is CH3991. A Research Project of 24 EC can be finalized before Christmas. Please do notice that an early termination of a TU Delft housing rental contract is not possible.

The MSc Chemical Engineering study guide can be found [here](#). More information about the tracks can be found on [this webpage](#).

Please note that the course offerings and time schedules are subject to modification.

We do not recommend mixing courses from different programmes and/or faculties since this is likely to lead to scheduling conflicts and overlap. Such scheduling conflicts are the responsibility of the student.

Students who intend to do a research project are strongly encouraged to take a proactive role in finding a supervisor and a research project within the Chemical Engineering department. The first step is to find a scientific contact person within the Faculty of Applied Sciences (possibly someone you have already been in contact with or are planning to collaborate with) and get direct approval from the professor of the group where you wish to do your research. In most cases, you will work under the supervision of a PhD student and his/her professor. Before applying for one of our two annual exchange periods, you should have already arranged a project yourself or be in the process of doing so. Please mention in your application the relevant actions you have taken.

In special cases, we may assist you in finding a supervisor for the research project after the application deadline but as mentioned, we expect you to take the lead. You can choose from the seven research groups of the Chemical Engineering department and the Radiation Science & Technology department (Reactor Institute Delft).

For more information about the departments of the Faculty of Applied Sciences, see:

[Departments at the Faculty of Applied Sciences](#)
[The Department of Chemical Engineering](#)
[Radiation Science & Technology](#)

You may also contact the IRS department (Burak Eral or Andrzej Stankiewicz) of the 3ME Faculty. Their contact information can be found on [this website](#).

When contacting our academic staff for the first time, please include the following information in your email:

- Why you have chosen TU Delft and the respective department
- That you are an exchange student from a TU Delft partner university, registered through the International Office Applied Sciences.
- The research area/topic you are interested in and why
- A resume covering your experiences and personal details
- A transcript of records

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