

# Construction Management and Engineering (4TU)

## MSc Programme



Today's construction industry is changing rapidly and calls for a new breed of managers that are able to competently combine engineering and organisational skills. Ageing (infra-) structures, urbanisation and globalisation, a need for logistics and maintenance optimisation, the energy transition and new construction techniques like 3D-printing are just some of the factors that yield huge management and project challenges for the future. To address these challenges, CME combines technical knowhow with managerial competences aiming to maximize value from technology.

### Programme

At Delft University of Technology, the master CME is an interfaculty program that combines the relevant expertise of the faculties of Civil Engineering & Geosciences (CEG), Architecture & the Built Environment (ABE) and Technology, Policy & Management (TPM). Through the shared expertise and collaboration of the three faculties CME offers its students a unique programme that provides the competences required to combine engineering knowledge with management skills and prepares future engineers for exciting jobs in today's demanding construction projects in an international context.

The master CME regards large-scale construction management, with a focus on large

projects & networks in complex environments, analytical tools & information modelling, as well as multidisciplinary & internationalisation. The programme is both process and design-oriented, as well as project based focusing on knowledge of processes, life-cycle and risk management and integrated contracts, to name a few. The CME curriculum provides students with extensive knowledge in the fields of system engineering, management and communication, with for example courses on project, asset and risk management, financial engineering, legal and governance as well as intercultural relations and collaboration. The students participating in this programme do not only develop their engineering, problem-solving and communication skills, but also learn how to achieve change in the building industry

Degree	Master of Science
Starts	September
Type	Full-time
Credits	120 ECTS, 24 months
Language	English
Application deadline	1 April: International students 1 July: Dutch degree
Tuition fee	€ 18.750 (non EU) € 2.168 (EU)
Scholarships	<a href="https://www.tudelft.nl/scholarships">scholarships.tudelft.nl</a>

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FIRST YEAR	SECOND YEAR
<b>CORE CURRICULUM (40-41 EC), INCLUDING:</b> <ul style="list-style-type: none"> <li>• COMPULSORY COURSES (36 EC)</li> <li>• 1 OUT OF 4 ETHICS COURSES (4 OR 5 EC)</li> </ul>	<b>ELECTIVE COURSES (21-25 EC), WHICH MAY INCLUDE:</b> <ul style="list-style-type: none"> <li>• RESEARCH INTERNSHIP (10 EC) OR</li> <li>• MULTIDISCIPLINARY PROJECT (10 EC) OR</li> <li>• JOINT INTERDISCIPLINARY PROJECT (10 EC)</li> </ul>
A SYNCHRONISATION COURSE (0 OR 2 EC) DEPENDING ON BSC	CME MSC THESIS PREPARATION (5 EC)
SPECIALISATION COURSES (17-20 EC) DEPENDING ON SPECIALISATION	CME MSC THESIS (30 EC)

by continuously assessing the construction process and its organisation. As a result, a CME-graduate from Delft is able to apply and develop innovative tools, systems and technologies, functions as a centre-piece in multidisciplinary projects and is at home in a dynamic multicultural environment.

Besides being an interfaculty master, CME is also a 4TU master programme, which means that there are also CME masters at the University of Twente (UT), focussing on market strategy and industry organisation, and at Eindhoven University of Technology (TU/e), focussing on urbanisation and smart cities. This 4TU-cooperation gives CME students the unique opportunity to follow courses at one of the other CME programmes, or to have graduation supervisors from different universities.

## Specialisations

In addition to a set of courses that is compulsory for all, CME students choose their own set of courses to specialize in one of the following three specializations that reflect current trends and needs in the market:

- **Engineering & Systems** focuses on improving system performance in engineering management, and real-life problem solving using system-development and open-design methods. Key topics include asset, operations and systems engineering management, risk and safety analysis and management, optimisation of maintenance and supply-chain management systems and building information modelling (BIM).
- **Projects & People** focuses on management of projects by a holistic approach, and is by, for and with people collaborating across organizations that are learning to adapt to change. Key topics include adaptive project and process management, governance and leadership, collaboration and stakeholder management, as well as procurement and contracting.
- **Design & Integration** focuses on the design and realization of plans to address societal challenges by integrating contextual needs and requirements, and by following design

and action research approaches. Key topics include integral and transdisciplinary design, urban development and innovation, sustainable and circular business modelling, legal and governance as well as financial and entrepreneurial engineering.

## Graduation examples

- Risk allocation in large infrastructure projects
- A machine learning approach for conceptual cost estimation
- Sustainable decision making: A green protocol for structural designers
- Optimizing construction knowledge integration in offshore wind projects
- Feasibility of driverless maintenance in dynamic highway construction zones
- Improved risk assessment for repairable infrastructure components in FMECA
- Governing construction projects in which 3D printing is applied.
- Towards reliability and predictability: probabilistic cost analysis at Schiphol

## Career prospects

Most CME students find a job within three months after graduating. CME graduates typically find positions as management trainees at large companies within the building industry, but they work in other sectors as well. CME alumni work in a great variety of jobs in planning, engineering and management. For example, at multinationals such as Shell and KPN, and for consultancy firms such as McKinsey, but most of them work for large national and international engineering firms such as Van Oord, Royal Haskoning DHV, Heijmans, PRC, Ballast Nedam and BAM. CME graduates are equally at ease speaking to technical experts, engineers and management, and often work in interdisciplinary environments. They have a systematic approach to problem solving, think analytically, discern the connections between technical and social aspects of a situation, and are adept at recognising common patterns that link issues across domain boundaries. They have a thorough knowledge of technology and the building industry and analytics skill to perform analyses of management processes.



**40 %**  
international students



**94**  
first year students in 2020



**270**  
students in total



**61%**



**39%**



Active student association

## Interfaculty programme which combines the relevant expertise of 3 faculties:

- Civil Engineering and Geosciences
- Architecture & the Built Environment
- Technology, Policy & Management