Today’s construction industry is changing rapidly and calls for a new breed of managers who can 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 are just some of the factors that yield huge management and project challenges. To address these challenges CME combines technical knowhow with managerial competences aiming to maximize value from technology.

### Programme

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.

Large-scale construction management is key in this master, with a focus on large projects & networks in complex environments, analytical tools & information modelling, as well as multidisciplinarity & 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 field of management and communication, with courses on cross-cultural management, financial engineering and project management.
The students not only develop their engineering, problem-solving and communication skills, but also learn how to achieve change in the building industry and assess the consequences for the construction process and its organisation. As a consequence, 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.

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 have graduation supervisors from the different universities.

Specialisations
As part of the elective space and in consultation by one of the MSc coordinators, CME students choose their own set of courses to specialise in one of the following four main research profiles that reflect current trends and needs in the market:

Management of Projects explores a new perspective on applying operations research (decision-making engineering) in design and construction management, based on the perspective that technical and social optimisation should not be separate, but integrated into a single design and construction process.

Digital Design & Asset Management covers the optimisation of maintenance and supply-chain management systems for quality, the environment and safety as they are becoming increasingly intertwined. Asset management is the bridging link in these management systems, while building information modelling (BIM) provides the necessary tools.

Integral and Multidisciplinary Design focuses on the balance between economics and sustainability, such as life-cycle management for a circular economy while taking all legal, safety related and humanitarian aspects into consideration.

Legal & Finance specifically considers the legal, contractual and financial issues related to the implementation and tendering of engineering projects. It considers economic engineering and finance, such as project financing and financial accounting, as well as policy and governance aspects.

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. Graduates typically find positions as management trainees at large companies within the building industry, but they work in other sectors as well. 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.