

Supporting Engineering Projects Through OpenCourseWare:

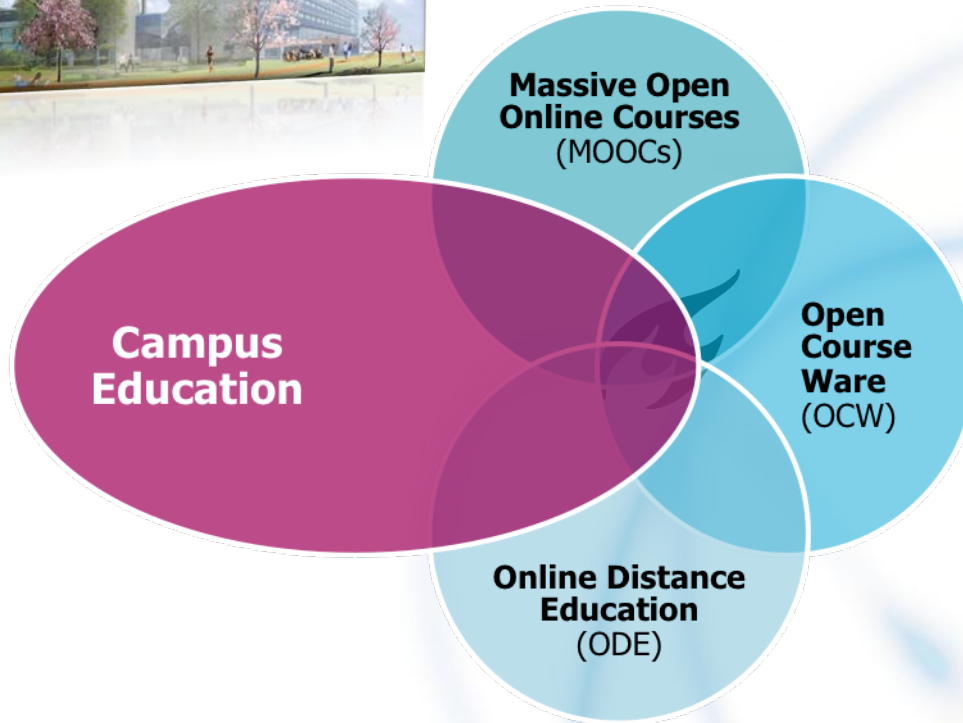
Two Case Studies.

Gijs Houwen, Open Education Team,
Delft University of Technology

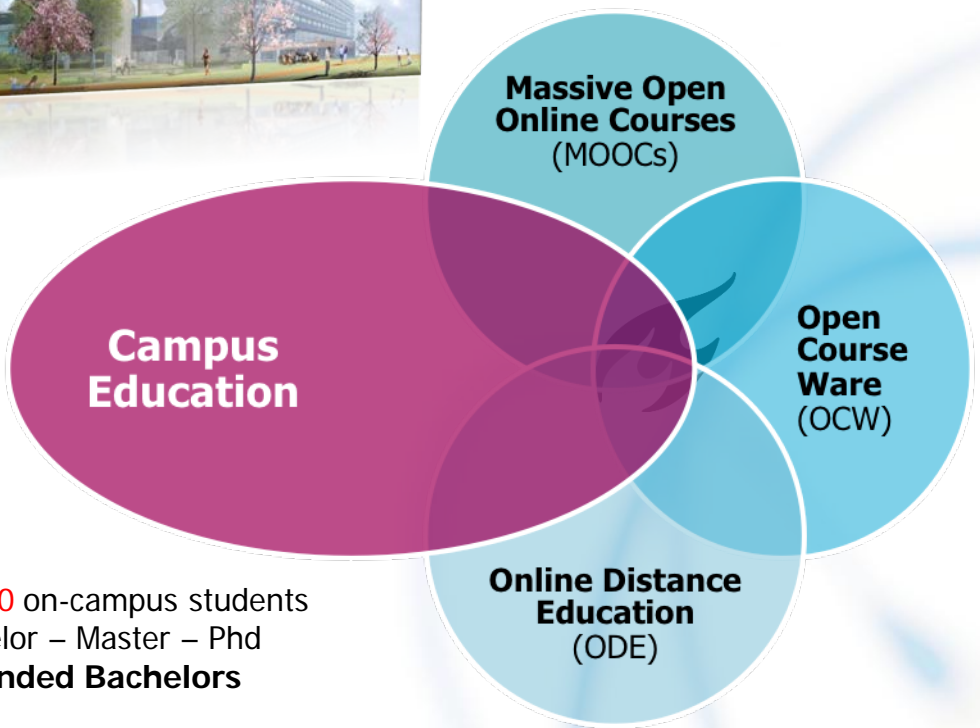
Content

- What?
 - Project support through OpenCourseWare
- So What?
 - Help meet some of Open Education's challenges
- How?
 - Targeted OpenCourseWare publications
- Results & Discussion

Open & Online portfolio



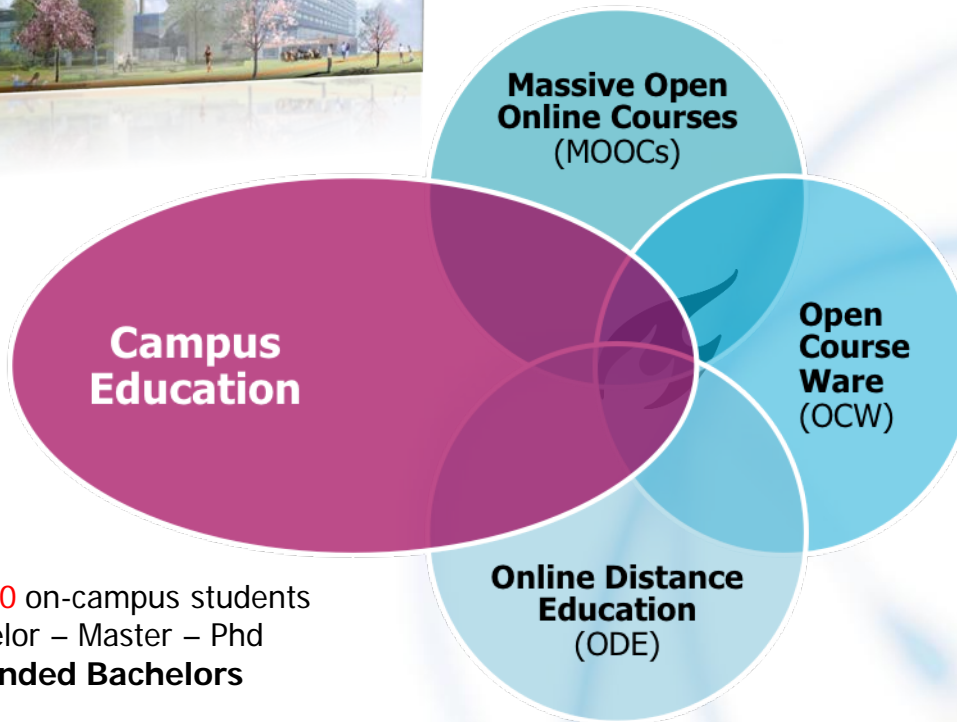
Open & Online portfolio



- **19.000** on-campus students
- Bachelor – Master – Phd
- **2 blended Bachelors**



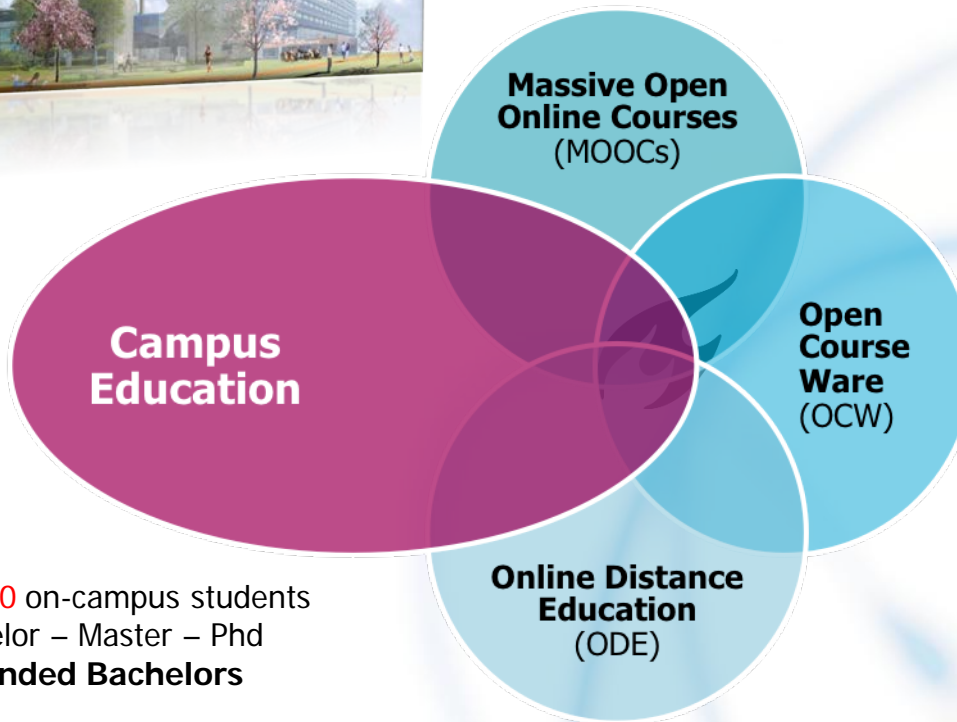
Open & Online portfolio



Open & Online portfolio



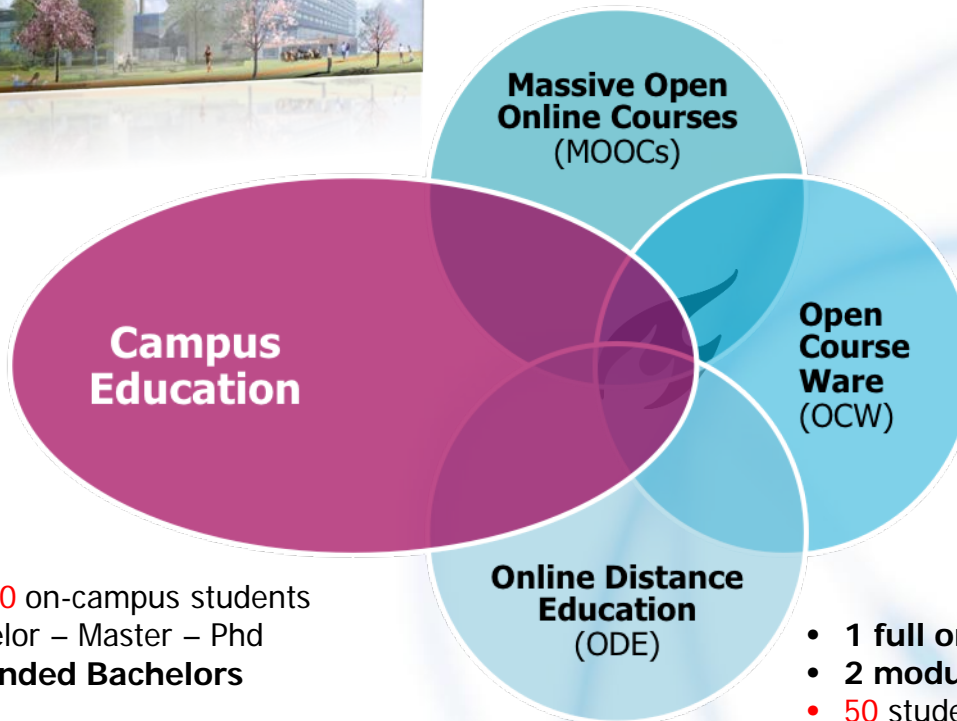
- **5 DelftX MOOCs** (> **125.000** enrollments)
- *No Credits*
- *Integrated learning activities & Assessment*



- **More than 130 courses online & 10.000 weblectures recorded**
- Unique visitors > **800 /day**
- *No interaction with faculty*
- *No accredited certificate*
- *'Static' learning materials*

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- **19.000** on-campus students
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- **1 full online master (25 courses)**
- **2 modules, 1 minor, 1 master (6 courses)**
- **50** students (30 on-campus)
- Full Master Degree / Accredited Course Certificate
- Full learning experience

OpenCourseWare TU Delft

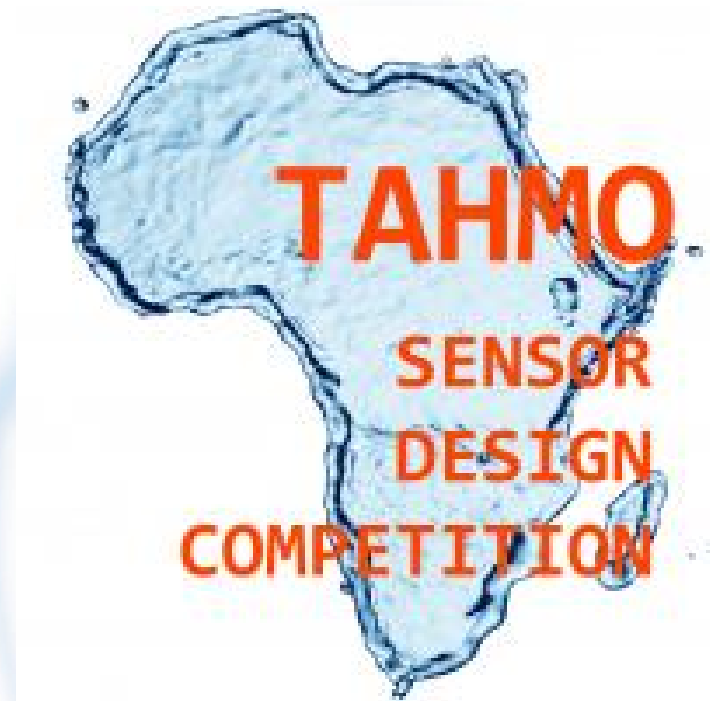
- Theme pages: Water, Health
- Research Institutes: Energy, Environment
- More: ocw.tudelft.nl/more

OpenCourseWare TU Delft

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- Meet Challenges:
 - Engage staff and students
 - Focus
 - Impact
 - Use and re-use

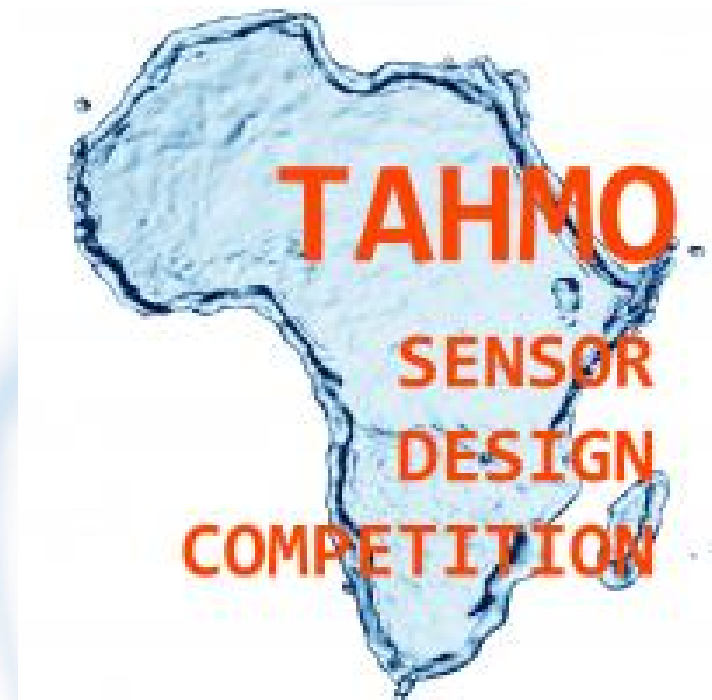
The Projects

- Trans African Hydro Meteorological Observatory



The Projects

- Trans African Hydro Meteorological Observatory
- DUT Racing



Sources:

<http://tahmo.org/about-the-tahmo-sensor-design-competition/>
<http://dutracing.nl/wp-content/uploads/2014/02/20131001-DUT14-October.pdf>

OpenCourseWare for TAHMO

Innovative Weather Sensing

Introduction

Electronic Instrumentation

Hydrologie (Bachelor)

Hydrology of catchments, rivers and deltas

Measurements for Water

Measurement Technology

Spatial Tools in Water Resources Management

[OCW](#) > [More](#) > Innovative Weather Sensing

Innovative Weather Sensing Trans-African Hydro-Meteorological Observatory Project



20,000 Weather Stations in Africa

Monitoring the weather in Africa can be a challenge for climate scientists in Africa, where there are very few observation networks. More accurate data would help understand the African climate and the possibilities the continent offers for agriculture and other water-related activities.

<http://ocw.tudelft.nl/Innovative-Weather-Sensing/>

TAHMO Results

- Seven new OCW Courses
- Staff engagement (+ course translation)
- Filled knowledge gap for participants
- Student engagement (request additional courses)
- Links theory to practice
- Experience with offline OCW

TAHMO Results



ABOUT US ▾

EDUCATION
▾

NEWS ▾

Free TAHMO Course Material

You are here: Home / Free TAHMO Course Material

We now offer some courses that relate to our TAHMO project. Learn how to take hydrological measurements, for example. Or educate yourself on hydrology or electronic instrumentation. Find more free OpenCourseWare materials of Delft University of Technology [here](#).

Bachelor Courses

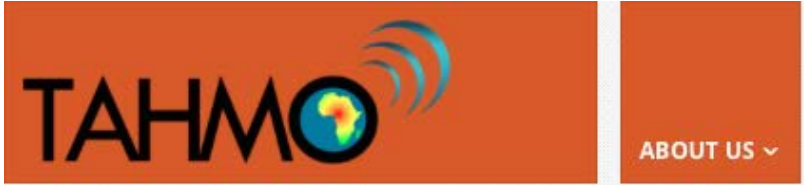
- # [Hydrologie](#) (only available in Dutch)
- # [Measurements for Water](#) (partly in English)
- # [Measurement Science](#)

Masters Courses

- # [Electronic Instrumentation](#)
- # [Hydrology of Catchments, Rivers and Deltas](#)
- # [Hydrological Measurements](#)
- # [Spatial Tools in Water Resources Management](#)

Source: <http://tahmo.org/free-tahmo-course-material/>

TAHMO Results



Free TAHMO Course Material

You are here

We now offer some courses that relate to our TAHMO project. Learn measurements, for example. Or educate yourself on hydrology or electronics. We also offer more free OpenCourseWare materials of Delft University of Technology.

Bachelor Courses

- # Hydrologie (only available in Dutch)
- # Measurements for Water (partly in English)
- # Measurement Science

Masters Courses

- # Electronic Instrumentation
- # Hydrology of Catchments, Rivers and Deltas
- # Hydrological Measurements
- # Spatial Tools in Water Resources Management

Source: <http://tahmo.org/course-material/>



Source: <http://tahmo.org/tahmo-final-challenge-nairobi-2013>

OpenCourseWare for DUT Racing

DUT Racing

Chassis

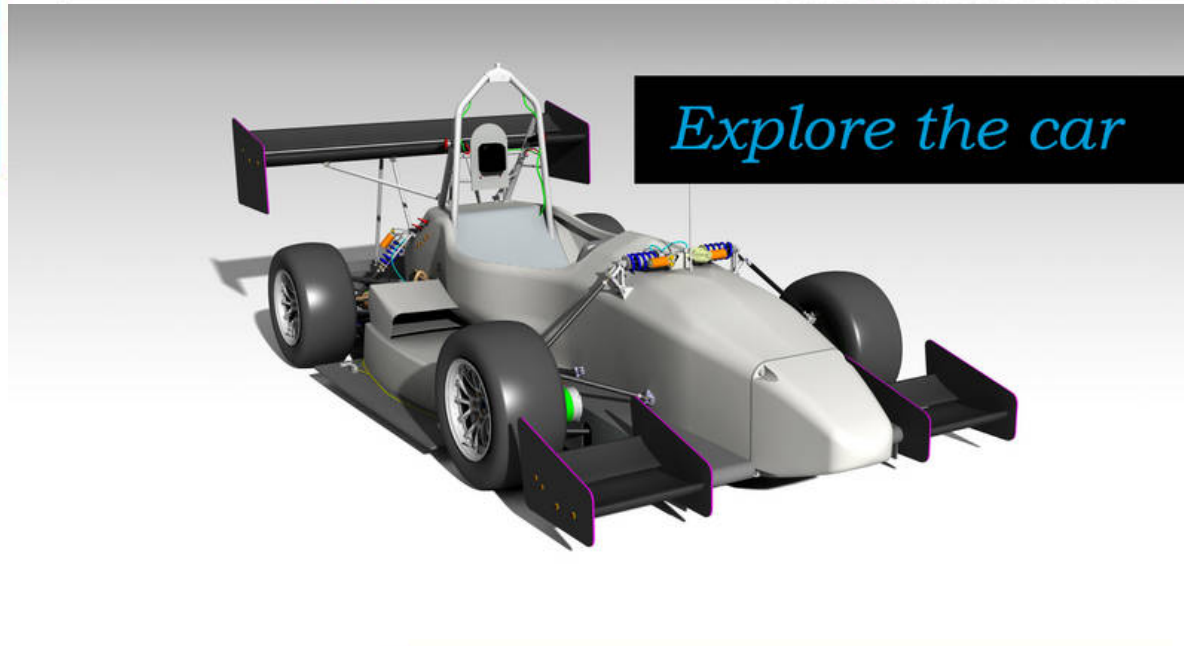
Vehicle Dynamics

Powertrain

Electronics

[OCW](#) > [More](#) > DUT Racing

DUT Racing



Each year students from a variety of studies work together in the interdisciplinary [DUT Racing team](#) to design, build and race an independently designed and manufactured car to compete during the annual [Formula Student competition](#).

<http://ocw.tudelft.nl/more/dut-racing/>

Elementary Ergonomics



Elementary Ergonomics



Elementary Ergonomics



Race Car Aerodynamics

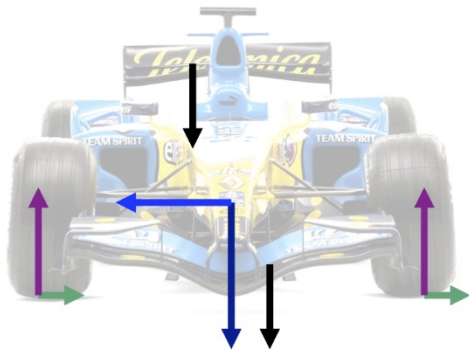
Aerodynamics of Race Cars WB1424BTU

Gerrit E. Elsinga, Laboratory for Aero & Hydrodynamics
11/14/13



Race Car Aerodynamics

Performance model
Turn at constant speed



weight
aerodynamic downforce
lateral friction
centrifugal force
reaction force

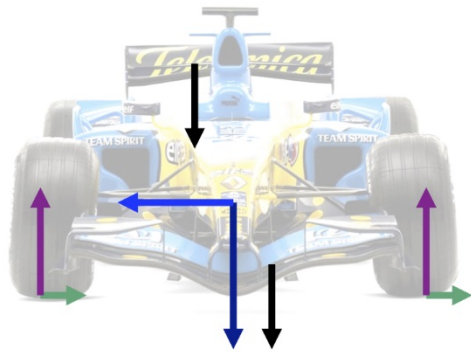
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DUT Racing Results

- Feeds back into teaching
 - Race Car Aerodynamics
 - Elementary Ergonomics
- Six new OCW Courses
- Staff engagement
- Aligned with DUT Racing – Knowledge sharing
- Student Reflection
- Links theory to practice
- Recruitment tool

Results - Internal

- Improved Education Quality & Staff Engagement
 - Provided case studies for regular courses
 - Shows application of theory
 - Motivates students to reflect
 - Focused application of OCW
 - Recruitment tool
-
- Successful example of OCW possibilities.

Results - External

- Engaged wider audience
- Showcased tangible research projects
- Provided background information to projects
- Recruitment tool (prospective) engineers
- Fulfilled education demand
- Improved project outcome
- Gained feedback

Results - Overall

- All of this while still:
 - Expanding our OCW
 - Sharing our knowledge
 - Showing what OCW can do!
- By: Aligning OCW activities with project goals and teaching activities

Questions?

- ocw.tudelft.nl/more
- <http://tahmo.org>
- <http://dutracing.nl>