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

Massive Open Online Courses (MOOCs)

Open Course Ware (OCW)

Online Distance Education (ODE)

Campus Education
Open & Online portfolio

- **19,000** on-campus students
- Bachelor – Master – PhD
- **2 blended Bachelors**
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- **Massive Open Online Courses (MOOCs)**
  - 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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Open Education | open.tudelft.nl/education
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- **No Credits**
- **Integrated learning activities & Assessment**

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19,000 on-campus students
Bachelor – Master – PhD
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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
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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/
OpenCourseWare for TAHMO

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-Sensoring/
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

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/
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Source: http://tahmo.org/tahmo-final-challenge-nairobi-2013
OpenCourseWare for 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

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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