Interuniversity Programme in
Water Resources Engineering

Master of Water Resources Engineering

Jan Diels

2 February, 2018, IUPWARE alumni event Cuenca

VRIJE UNIVERSITEIT BRUSSEL

KU LEUVEN

Academic Year 2017-2018
All programmes
English-language programmes of study
Programmes en français
Programa en español
Archive

Master of Water Resources Engineering (Leuven et al)

Master of Science

The Master of Water Resources Engineering addresses water-related issues in developed and developing countries, with a focus on problems in the latter. The general programme objective is to educate professionals and scientists who contribute effectively to the development and management of water resources on both a local and global scale.

APPLY NOW

Choose your courses of study

Master of Water Resources Engineering (120 ECTS)
Abridged Programme (60 ECTS)

Education | Profile | Career perspectives | Contact and links | Admission requirements | Objectives

What is the Master of Water Resources Engineering all about?

The Master's programme provides **multi-disciplinary and high-quality university education** in the field of water resources engineering. Students will be trained with technical and managerial knowledge and skills to: (i) successfully plan, design, operate and manage water resources projects; and (ii) advise and support authorities in decision-making and policy-making that enhance the safe exploitation and re-use of wastewater and the equitable distribution and conservation of local, regional and global water resources.

OPEN DAYS | REQUEST THE BROCHURE | DOWNLOAD THE BROCHURE

Aims …

Provides multi-disciplinary and qualitative professional higher education in the field of water resources engineering with the aim to equip future professionals and scientists with the technical and managerial knowledge and skills they need to:

- successfully plan, design, operate and manage water resources projects; and
- advise and support authorities in decision-making and the development of policies and regulations that enhance the safe exploitation and re-use of water, the equitable distribution and the conservation of the local, regional and global water resources.

Phase 1 (60 ECTS

Scientific Basis for Water Resources Engineering (WRE) (43 ECTS):

- Advanced Mathematics for Water Engineering (5 ECTS)
- Groundwater Hydrology (5 ECTS)
- Irrigation Agronomy (5 ECTS)
- Aquatic Ecology (5 ECTS)
- Statistics for Water Engineering (5 ECTS)
- Hydraulics (5 ECTS)
- Surface Water Hydrology (5 ECTS)
- Waste Water Treatment and Resource Recovery (4 ECTS)
- Water Quality (4 ECTS)

Workshop on Integrated Water Management (5 ECTS):

- Integrated Water Management (5 ECTS)

ICTS and Data Collection for Water Resources (12 ECTS):

- GIS and data processing for water resources engineering (6 ECTS)
- Remote sensing and measuring techniques for water resources engineering (6 ECTS)

Phase 2 (60 ECTS

Common Advanced Courses in Water Resources Engineering (10 ECTS):

- Social, Political, Institutional, Economic & Environmental Aspects of Water Resources (5 ECTS)
- Systems Approach to Water Management (5 ECTS)

Specialized Knowledge and Skills in WRE and Modelling (15 ECTS):

Students choose 3 elective courses from the following courses (each has 5 ECTS):

- Soil Water Modelling
- Groundwater Modelling
- Land-Climate Dynamics
- River Modelling
- Irrigation Design and Water Productivity Management
- Freshwater and Marine Ecology
- Surface Water Modelling
- Urban Hydrology and Hydraulics
- Environmental programming

Integrated Project Work (5 ECTS):

- Integrated Project: Temperate or (sub)Tropical Climate Case Study (5 ECTS)

Master Thesis (30 ECTS):

- Setting Up Research Project (5 ECTS)
- Research Methods for Data Collection and Processing (5 ECTS)
- Thesis Research Project Water Resources Engineering (20 ECTS)

Two key themes in the master:

- Integrated Water Management
- Hydrological and Hydraulic Modelling

+ ‘Water quality’ and ‘climate change’ are integrated in several course units

Project-based learning

Integrated project in 2016-2017:

= Three weeks intensive group work, emphasis on integration

3 options:

1. Case study on Nete basin in collaboration with IMDC
2. Participate in modelling workshop Hydro-Europe in Nice: (Var river) See http://www.hydroeurope.org/
3. Case study on Pangani basin and Makanya catchment in Tanzania (1 week at VUB, 2 weeks in Tanzania)


Same
Kilimanjaro
Makanye River
Upland
Suji
dge over Makanye river
US Dept of State Geographer
Image © 2016 CNES / Astrium
© 2016 Google
Image Landsat / Copernicus

Integrated project: planning for coming years

	Temperate	(sub)Tropical
2017-2018	Var (France) +Biebzra (Poland)	Rio Jubones (Ecuador)
2018-2019	Zenne (Belgium)	Makanya (Tanzania)
2019-2020	Zenne (Belgium)	Lake Chamo basin, Ethiopia ?

Abridged programme (60 ECTS)

Candidates with a Master degree of a five stage programme in agricultural, civil or environmental engineering or equivalent can apply for the abridged Master programme and can be exempted of 60 ECTS of the regular 120 ECTS programme. Applicants should have gained an equivalent of 60 or more relevant ECTS in their previous training. The relevance refers to mathematical, statistical and/or chemical techniques, data processing tools, knowledge in one or more aspects of water resources engineering and the conductance of a Master research. Applications are evaluated on an individual base.

Abridged (60 ECTS)

Common Advanced Courses in Water Resources Engineering (10 ECTS):

- Social, Political, Institutional, Economic & Environmental Aspects of Water Resources (5 ECTS)
- Systems Approach to Water Management (5 ECTS)

Specialized Knowledge and Skills in WRE (25 ECTS):

Students choose a number of optional courses for an equivalent of 25 ECTS

- Groundwater Hydrology
- Irrigation Agronomy
- Aquatic Ecology
- Statistics for Water Engineering
- Integrated water management
- Land-Climate Dynamics
- Soil Water Modelling
- Groundwater Modelling
- River Modelling
- Irrigation Design and Water Productivity Management
- Hydraulics
- Surface Water Hydrology
- Waste Water Treatment and Resource Recovery
- Water Quality
- Freshwater and Marine Ecology
- Surface Water Modelling
- Urban Hydrology and Hydraulics
- Environmental programming

Integrated Project Work (5 ECTS):

- Integrated Project: Temperate or (sub)Tropical Climate Case Study (5 ECTS)

Master Thesis (20 ECTS)

Number of students:

Intake of about 30 students/year:
10 from Europe
20 from outside Europe

12 student grants each intake from VLIR-UOS (Belgian Development Cooperation) for students from developing countries (Africa, Latin America, Asia)


Alieu (Gambia)
Prof. Steve (USA)
Prof. Philippe (France)
Thuy (Vietnam)
Alemu (Ethiopia)
Hung (Vietnam)
Paul (Ecuador)
Nimnee (Nepal)
Ema (Bangladesh)
Alex (Greece)
Agis (Greece)
Joseph (Uganda)
Shashwat (Nepal)
Timothy (Belgium)
Zeqir (Italy/Albania)
Bich (Vietnam)
Melinda (Uganda)
Subas (Nepal)
Paolo (Italy)
Dennis (Kenya)
Anjali (India)
Olivia (Brazil
Gloria (Italy)
Kalkidan (Ethiopia)
(Portugal)
Tinos (Zimbabwe)
Lucy (The Netherlands)
Hiroke (Bangladesh)
Victoria (Romania)
Richard (Rwanda)
Daniela ((Spain)
Beye Ne (Ethipia)
Pieter (Belgium)
Pedro (Ecuador)
Anouck (Belgium)
Tonia (Libanon)
Hedi (Estonia)
George (Ghana)
Sara (Ethiopia)
IUPWARE- 2nd Year
2017-2018

Employability

Professional positions held by the 229 alumni that are member of the IUPWARE/ LinkedIn alumni group:

Profession category	Count	%
Consultancy	49	21.4%
Management/Admin	80	34.9%
Academic	23	10.0%
Research	57	24.9%
Unknown	20	8.7%
Total	**229**	**100%**

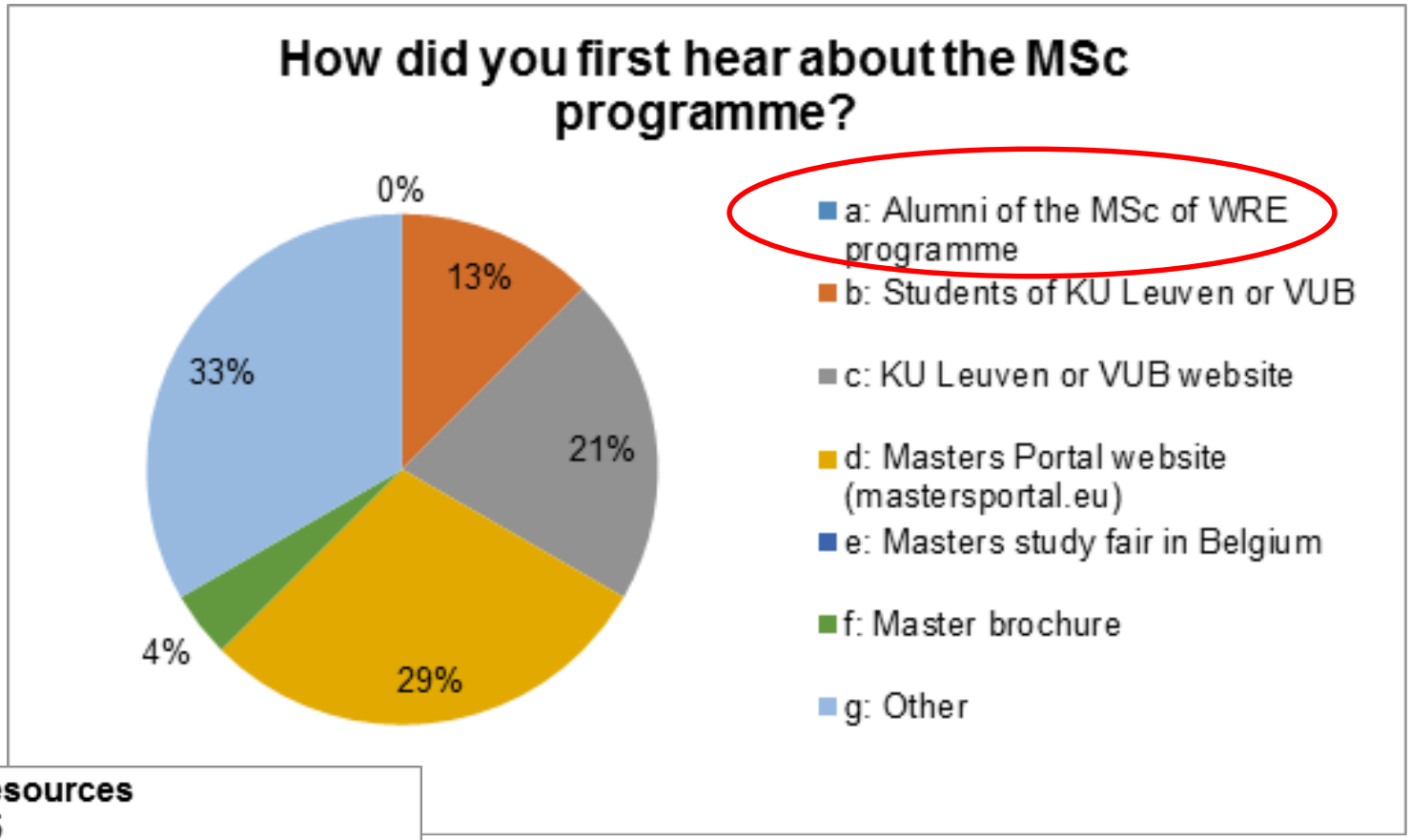
31 countries for ICP grants from VLIR-UOS (and number of eligible applicants in 2017 = 107):

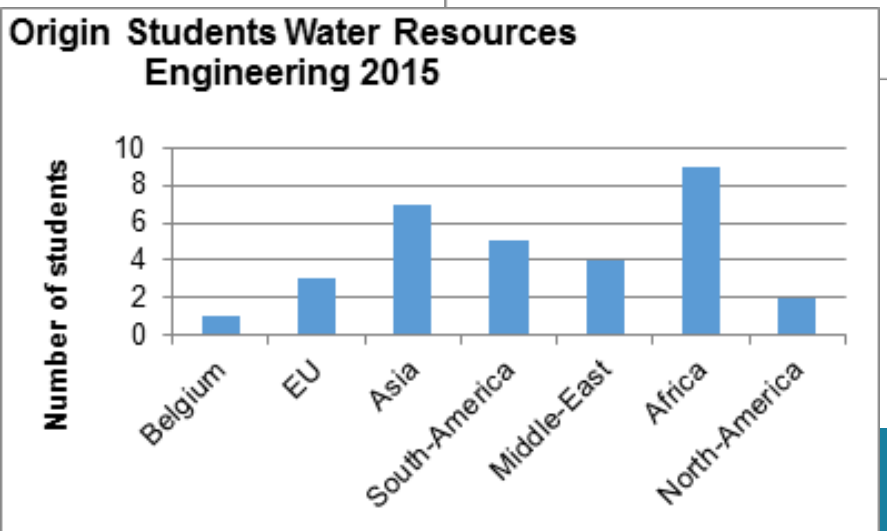
Africa (78): Benin, Burkina Faso (1), Burundi, DR Congo, Ethiopia (39), Guinea, Cameroon (1), Kenya (7), Madagascar, Mali, Morocco, Mozambique, Rwanda (9), Senegal, Tanzania (5), Uganda (12), Zimbabwe (3), South Africa (1), Niger

Asia (22): Cambodia, Philippines (8), Indonesia (4), Palestinian Territories (9), Vietnam (1)

Latin America (7): Bolivia (3), Cuba, Ecuador (3), Guatemala (1), Haiti, Nicaragua, Peru

Survey among incoming WRE students in September 2015 (n=31):





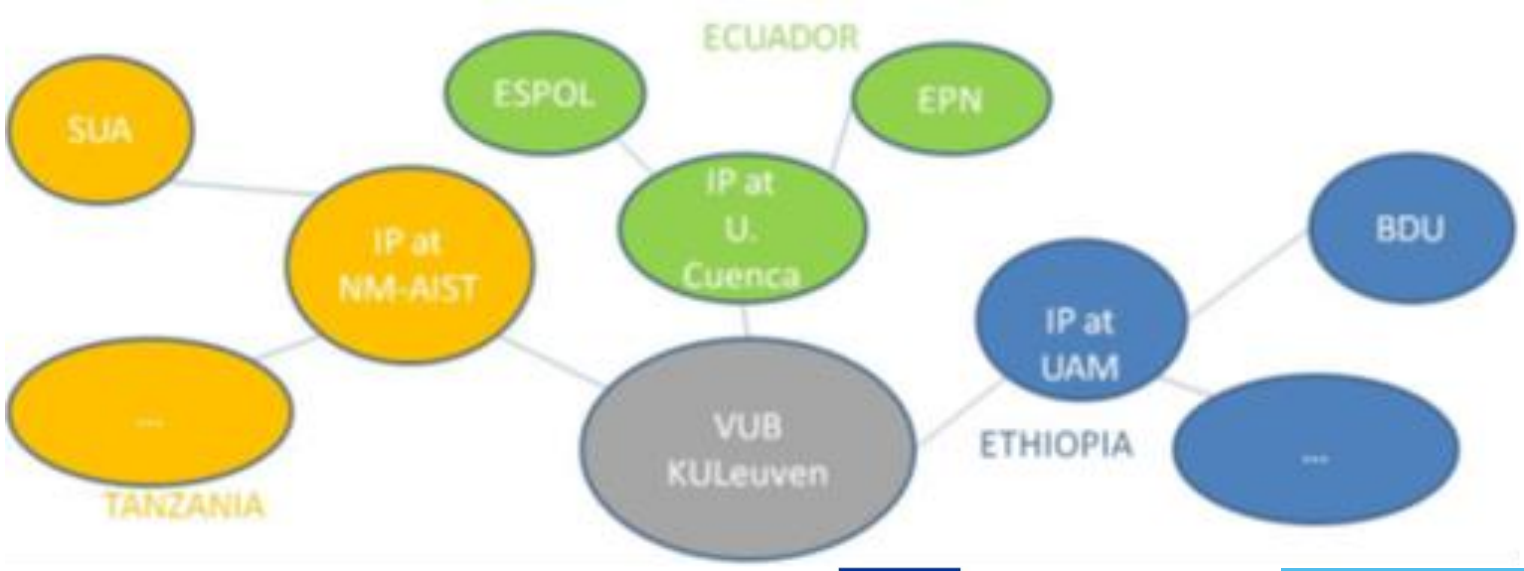
VUB VRIJE UNIVERSITEIT BRUSSEL

KU LEUVEN

Collaboration with the South

(12 VLIR-UOS grants and incremental funding of 150k€/year)

- Joint supervision of master theses and joint IP >> Semester exchange >> joint degree
- Better contact with alumni (yearly alumni event rotates between regions)
- Better coaching to students from the South



VUB VRIJE UNIVERSITEIT BRUSSEL

KU LEUVEN

Discussion topics working groups:
(40 minutes followed by 30 minutes plenary discussion)

1. Based on your professional experience, what are the key competencies (knowledge, attitudes and skills) that a graduate of our masters' program should have?

2. Which opportunities do you see to strengthen our program to reach this?

3. Do you think we need to shift emphasis in our program?

4. What could be the role of alumni to promote our program better?