Module shared with another track

T1-a — Module number and a letter, showing that there is a common part shared with other tracks, with profile/track specific applications

MSc programmes curricula 2022-2023/24

Version 7 September 2022

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Thematic track 1: Water Hazards, Risk and Climate

Engineering & Hydrology; Digital Innovation & Hydroinformatics; Governance & Management

- 80 Introduction to the Water and Sustainable Development Programme
- 1 **Introduction to Water hazards, risk & climate**
- 74 Skills Development – Group Dynamics and Critical Reading
- 2 Introduction to Coastal Science and Engineering
- 30 Urban Drainage and Sewerage
- 10 Hydrology and Ecosystems
- 11 Modelling, Programming and Computational Hydraulics
- Rethinking Water (T1-a) — 16 Climate Adaptation Politics, Uneven Distribution Risks
- 3 Coastal Processes and Morphology
- Analysis of Climatic and Hydrological Variability and Change 7
- 13 River Basin Modelling
- Organizing Water (T1-a) — 17 River Basins and Cities (incl. law).
- 75 Skills Development – Debating and Scientific Writing I
- 4 Modelling Coastal Hazards
- 8 Geoprocessing in Urban Water
- 68 Drought Risk Management
- AI for Water Systems — 12 Application to Water Hazards
- 20 Water Conflict and Cooperation
- Finance and Implementation (T1-a) — 19 Climate Finance
- 5 Design of Risk Reduction Measures in Coastal Zones
- 9 Sustainable Urban Drainage Systems
- Strategic Planning and Futuring (T1-a) — 22 Delta Planning, Urbanizing Deltas
- 14 Flood risk management
- 18 Water Diplomacy and Conflict Transformation
- Policy Analysis (T1-a) — 21 Climate Adaptation, Resilience
- 76 Skills Development – Scientific Writing II and Data Management I
- Climate Change Adaptation in Lowland Areas — 6 Climate Change Adaptation in Coastal Areas & Ports; Water Sensitive Cities (sponge cities); Climate Change Adaptation Measures in River Basins
- 15 Decision Support Systems in Water Domain
- 39 Urban Ecosystems in a Changing Climate
- 77 Skills Development – Data Interpretation and Science Communication
- 83 Interdisciplinary Project and Fieldwork
- 84 Research Methodology and Thesis Proposal Preparation
- MSc proposal defences
- 85 MSc Thesis
- MSc thesis defences
- Reflection & Graduation

Thematic track 2: Water and Health

Engineering; Sanitation; Governance & Management

- 24 **Introduction to Water and Health**
- 74 Skills Development – Group Dynamics and Critical Reading
- 25 Surface Water Treatment
- 30 Urban Drainage and Sewerage
- 35 City-Wide Inclusive Sanitation
- Rethinking Water (T2-b) — 16 Water Supply, Sanitation, Drainage
- 26 Ground Water Treatment
- 31 Wastewater Treatment Processes and Technologies
- 36 On-site Sanitation and Treatment
- Water, Practices and Institutions (T2-a) — 40 Urban Practices
- Organizing Water (T2-b) — 17 Utility, Informal Providers
- 75 Skills Development – Debating and Scientific Writing I
- 27 Water Transport and Distribution
- Sludge Treatment and Resource Recovery — 32 Reuse and Circular Economy
- Finance and Implementation (T2-b) — 19 Value Chain, Tariffs, Investments
- 29 Desalination and Water Reuse: Engineering and the Environment
- Wastewater Treatment Design and Selection — 33 Various Plants Design
- 37 Humanitarian WASH
- Policy Analysis (T2-b) — 21 WatSan & Health Policies
- 76 Skills Development – Scientific Writing II and Data Management I
- 28 Drinking Water Treatment Plant Design
- 34 Experimental Methods for Water, Sanitation and Environmental Technology
- 38 Industrial Water and Resource Management
- Operational Water Management (T2-b) — 23 Transport & Distr.; Safety Plans; Asset Mgt
- Transformation, Advocacy and Change (T2-a) — 41 Water, Sanitation
- 77 Skills Development – Data Interpretation and Science Communication
- 83 Interdisciplinary Project and Fieldwork
- 84 Research Methodology and Thesis Proposal Preparation
- MSc proposal defences
- 85 MSc Thesis
- MSc thesis defences
- Reflection & Graduation

Thematic track 3: Water, Food and Energy

Engineering; Governance & Management; Environment; Digital Innovation

- 42 **Introduction to Water, food & energy**
- 74 Skills Development – Group Dynamics and Critical Reading
- 51 Water-Energy-Food Nexus: Approaches for River Basin Management
- 46 Water and Crop Production
- Rethinking Water (T3-c) — 16 Irrigation, Energy
- 49 Digital Innovations for Water Challenges
- 43 Energy Harnessing in the Urban Water Cycle
- 47 Assessing Irrigation Performance
- Organizing Water (T3-c) — 17 Irrigation, WUA
- Water, Practices and Institutions (T3-b) — 40 Land tenure water reform
- 59 Hydrological Monitoring, Data Collection and Analysis and Assessment.
- 75 Skills Development – Debating and Scientific Writing I
- 71 Marine Renewable Energy Sources
- 48 Irrigation Design and Modernisation
- 50 Food system transformation for sustainable food production and climate change adaptation
- AI for Water Systems (T3-b) — 12 Application Water, Agric and Energy
- 18 Water Diplomacy and Conflict Transformation
- Hydraulic Design of Structures (T3-a) — 45 Irrigation
- Policy Analysis (T3-c) — 21 Agrarian Change, Biofuels, Reuse
- 52 Wetlands for Livelihoods and Conservation
- 55 Sensing and Geo-procession for Precision Agriculture
- 76 Skills Development – Scientific Writing II and Data Management I
- 44 Dams and Hydropower
- Operational Water management (T3-c) — 23 (De)centralized Water, Food & Energy Systems
- Transformation, Advocacy and Change (T3-b) — 41 Grassroot Initiatives
- 54 Wastewater Reuse in Agriculture
- 53 Remote Sensing for Agricultural Water Management
- 67 Integrated Modelling of Water, Eco- and Social Systems
- 77 Skills Development – Data Interpretation and Science Communication
- 83 Interdisciplinary Project and Fieldwork
- 84 Research Methodology and Thesis Proposal Preparation
- MSc proposal defences
- 85 MSc Thesis
- MSc thesis defences
- Reflection & Graduation

Thematic track 4: Water Resources and Ecosystem Health

Engineering & Hydrology; Environment; Digital Innovation; Governance & Management

- 70 **Introduction to Water resources and ecosystem health**
- 74 Skills Development – Group Dynamics and Critical Reading
- 10 Hydrology and Ecosystems
- 49 Digital Innovations for Water Challenges
- Rethinking Water (T4-d) — 16 Water Resources, Nature Conservation
- 57 Hydraulics for Engineering Applications
- Hydrological Monitoring, Data Collection and Analysis and Assessment. 59
- 63 Water Quality Assessment and Management
- 13 River Basin Modelling
- Organizing Water (T4-d) — 17 River Basins (incl. law).
- 75 Skills Development – Debating and Scientific Writing I
- 64 River Morphodynamics
- 60 Surface Water and Groundwater Flow Dynamics
- 20 Water Conflict and Cooperation
- 61 Aquatic Ecology and Bioassessment
- AI for Water Systems (T4-c) — 12 Application to Water Resources
- Finance and Implementation (T4-c) — 19 Resource Economics
- Hydraulic Design of Structures (T3-b) — 45 River Structures
- 58 Geochemistry and Tracers for Hydrological Studies
- 62 River and Floodplain Rehabilitation
- 66 Water Resources Assessment using Remote-Sensing Data
- Strategic Planning and Futuring (T4-b) — 22 River Basins
- 76 Skills Development – Scientific Writing II and Data Management I
- 44 Dams and Hydropower
- Hydrological Modelling — 56 Groundwater modelling; Surface water modelling
- 67 Integrated Modelling of Water, Eco- and Social Systems
- Operational Water Management (T4-d) — 23 Multiple purpose dams, e-flows
- 65 Environmental Assessment and Environmental Law
- 77 Skills Development – Data Interpretation and Science Communication
- 83 Interdisciplinary Project and Fieldwork
- 84 Research Methodology and Thesis Proposal Preparation
- MSc proposal defences
- 85 MSc Thesis
- MSc thesis defences
- Reflection & Graduation

WSD- Joint programmes

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- **Coastal Hazards 120 EC**: Modules at partner institute; 3 Coastal Processes and Morphology; 4 Modelling Coastal Hazards; 5 Design of Risk Reduction Measures in Coastal Zones; 6 Climate Change Adaptation in Lowland Areas (Climate Change Adaptation in Coastal Areas & Ports; Water Sensitive Cities (sponge cities); Climate Change Adaptation Measures in River Basins); 72 Dynamic and statistical regional wave modelling; 73 Flood Protection in Lowland Areas; exams; Modules at partner institute
- **HERBD with Kuala Lumpur 97 EC**: 80 Introduction to Water and Sustainable Development; 70 Introduction to Water Resources and Ecosystems Health; 74; 51 Water-Energy-Food Nexus: Approaches for River Basin Management; 57 Hydraulics for Engineering Applications; 64 River Morphodynamics; 45 Hydraulic Design of Structures (T3-b) — River Structures; 44 Dams and Hydropower; 83 Interdisciplinary Project and Fieldwork; 91 Online course Environmental Flows; Modules at partner institute
- **LWM 120 EC**: Modules at partner institute; 75; 61 Aquatic Ecology and Bioassessment; 52 Wetlands for Livelihoods and Conservation; 76; 67 Integrated Modelling of Water, Eco- and Social Systems; 77; 83 Interdisciplinary Project and Fieldwork; Modules at partner institute; Capita selecta / electives; Thesis research proposal development; Thesis research and thesis writing
- **IMETE 120 EC**: Modules at partner institute; Sludge Treatment and Resource Recovery — 32 Reuse and Circular Economy; 69 Unit Processes for Saline Water Treatment; Wastewater Treatment Design and Selection — 33 Various Plants Design; 29 Desalination and Water Reuse: Engineering and the Environment; 76; 38 Industrial Water and Resource Management; 54 Wastewater Reuse in Agriculture; 77; 83 Interdisciplinary Project and Fieldwork; 81 Interdisciplinary project / Communication and Writing Skills for Engineers; Modules at partner institute; Modules at partner institute
- **Water Cooperation and Diplomacy 92 EC**: Modules at partner institute; 16 Rethinking Water (T4-d); 17 Organizing Water (T4-d); 75; 20 Water Conflict and Cooperation; 18 Water Diplomacy and Conflict Transformation; 76; Elective module; 77; 78 Introduction into Interdisciplinary Research; Modules at partner institute

WSE- Joint programmes

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- **GroundWatch 120 EC**: Modules at partner institute; 58 Geochemistry and Tracers for Hydrological Studies; 76; Hydrological Modelling — 56 Groundwater Modelling; 77; 83 Interdisciplinary Project and Fieldwork; 82 Groundwater Data Collection and Interpretation; 88 Groundwater in Adaptation to Global Change Impacts; exams; 89 Water Resources Planning under Changing Climate and Environment; 90 Remote Sensing for Agricultural Water Management; exams; Modules at partner institute
- **Flood Risk Management 120 EC**: Modules at partner institute; 79 Computational intelligence and Data-driven Modelling; 15 Decision Support Systems in Water Domain; 77; 83 Interdisciplinary Project and Fieldwork; 86 River Flood Analysis Modelling; 87 Urban Flood and Disaster Management; 137 River Basin Modelling; exams; 147 Flood Risk Management; Modules at partner institute
- **IMHI 106 EC**: Modules at partner institute; 7 Analysis of Climatic and Hydrological Variability and Change; 75; 27 Water Transport and Distribution; AI for Water Systems — 12 Application to Water Hazards; 22 Strategic Planning and Design (T4-b) — River Basins; 76; 15 Decision Support Systems in Water Domain; 77; 83 Interdisciplinary Project and Fieldwork; 84 Research Methodology and Thesis Proposal Preparation; 77 River Basin Modelling; 92 Flood Risk Managemnt; Thesis research and thesis writing