Exclosure to Subject Specific Regulations
from 25.07.2018
for Master-Programme
Wasser- und Umweltingenieurwesen
at TUHH
Programme Director: Prof. Ralf Otterpohl
Total: 120 CP
Number of Specilisations to choose: 1

TUHH
Hamburg University of Technology

# Course Scheme Master Water and Environmental Engineering (WUMS)

Consolidated Version
for Study Cohort: WiSe21/22
en_head_sda
and Approval of Chair from:
19.05.2021
In Force on: 01.10.2021
Out of Force on: 30.09.2024

Information regarding the lectures are available in the TUHH modul manuals as well as in the course catalogue.

| | Module | | | | | | | Examination | | | Course Work | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Re-com. Term | Module Name (German / English) | Language | ModuleResponsability | Institute | C/EC (1) | CM/ OM (2) | CP (4) | Grade | Exami-nation Form(3) | Compulsory | Course Work Type | Bonus (in %) |
| **Core qualification** Compulsory Courses: 24 LP Optional Courses: 0 LP | | | | | | | | | | | | | |
| | 1 | Biologie, Geologie und Chemie / Biology, Geology and Chemistry | DE / EN | Dr. Rechtenbach | B-2 | C | CM | 6 | Y | KL | | | |
| | 1 | Nachhaltigkeit und Risikomanagement / Sustainability and Risk Management | DE / EN | Prof. Kuchta | V-9 | C | CM | 6 | Y | SA | | | |
| | 1-3 | Nichttechnische Angebote im Master / Non-technical Courses for Master | DE / EN | Richter | 0-TUHH | C | OM | 6 | Selection out of seperatly published Catalogue | | | | |
| | 1-3 | Betrieb & Management / Business & Management | DE / EN | Prof. Meyer | W-1 | C | OM | 6 | Selection out of seperatly published Catalogue | | | | |
| **Specialisation Cities** Compulsory Courses: 42 LP Optional Courses: 24 LP | | | | | | | | | | | | | |
| | 1 | Abwasserreinigung und Luftreinhaltung / Wastewater Treatment and Air Pollution Abatement | DE / EN | Dr. Pietsch | V-3 | C | CM | 6 | Y | KL | | | |
| | 1 | Integrierte Verkehrsplanung / Integrated Transportation Planning | DE | Prof. Gertz | W-8 | C | CM | 6 | Y | SA | | | |
| | 1 | Umweltschutz und -management / Environmental Protection and Management | EN | Prof. Otterpohl | B-2 | C | CM | 6 | Y | KL | | | |
| | 2 | Abwassersysteme / Wastewater Systems | EN | Prof. Otterpohl | B-2 | C | CM | 6 | Y | KL | | | |
| | 2 | Städtisches Umweltmanagement / Urban Environmental Management | EN | Dr. Rechtenbach | B-2 | C | CM | 6 | Y | SA | | | |
| | 2 | Stadtplanung / City Planning | DE | Prof. Gertz | W-8 | C | CM | 6 | Y | SA | | | |
| | 2 | Abfallbehandlung und Feststoffverfahrenstechnik / Waste Treatment and Solid Matter Process Technology | DE / EN | Prof. Kuchta | V-9 | EC | CM | 6 | Y | KL | | | |

| | Module | | | | | | | Examination | | | Course Work | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Re-com. Term | Module Name (German / English) | Language | ModuleResponsability | Institute | C/EC (1) | CM/ OM (2) | CP (4) | Grade | Exami-nation Form(3) | Compulsory | Course Work Type | Bonus (in %) |
| | 2 | Advanced Vadose Zone Hydrology / Advanced Vadose Zone Hydrology | EN | Prof. Shokri | B-9 | EC | CM | 6 | Y | KL | | | |
| | 2 | Elektrische Energie aus Solarstrahlung und Windkraft / Electrical Energy from Solar Radiation and Wind Power | DE | Dr. Höfer | V-9 | EC | CM | 6 | Y | KL | | | |
| | 2 | Hydrologische Systeme / Hydrological Systems | DE / EN | Prof. Fröhle | B-10 | EC | CM | 6 | Y | KL | | | |
| | 2 | Ingenieurgeochemie / Geochemical Engineering | EN | Dr. Ritzkowski | SD-B | EC | CM | 6 | Y | KL | | | |
| | 2 | Management von Oberflächenwasser / Management of Surface Water | DE / EN | Prof. Fröhle | B-10 | EC | CM | 6 | Y | KL | | | |
| | 2 | Marine Geotechnik / Marine Geotechnics | DE | Prof. Grabe | B-5 | EC | CM | 6 | Y | KL | | | |
| | 2 | Modellierung in der Wasserwirtschaft / Modeling in Water Management | DE / EN | Dr. Johannsen | B-11 | EC | CM | 6 | Y | MP | | | |
| | 2 | Multiphase Flow in Porous Media / Multiphase Flow in Porous Media | EN | Prof. Shokri | B-9 | EC | CM | 6 | Y | KL | | | |
| | 2 | Nexus Engineering - Wasser, Boden, Nahrung und Energie / Nexus Engineering - Water, Soil, Food and Energy | EN | Prof. Otterpohl | B-2 | EC | CM | 6 | Y | FFA | | | |
| | 2 | Smart Monitoring / Smart Monitoring | EN | Prof. Smarsly | B-1 | EC | CM | 6 | Y | SA | | | |
| | 2 | Verkehrsmodellierung / Transportation Modelling | DE | Prof. Gertz | W-8 | EC | CM | 6 | Y | SA | | | |
| | 2 | Water and Environment: Theory and Application / Water and Environment: Theory and Application | EN | Prof. Shokri | B-9 | EC | CM | 6 | Y | SA | | | |
| | 3 | Studienarbeit Stadt / Study Work Cities | | Dozenten des SD B | B-2 | C | CM | 6 | Y | STA | | | |
| | 3 | Abfallbehandlungstechnologien / Waste Treatment Technologies | DE / EN | Prof. Kuchta | V-9 | EC | CM | 6 | Y | RE | Y | FFST | 0 |
| | 3 | Anpassung an den Klimawandel in der wasserbaulichen Praxis (AKWAS) / Adaptation to Climate Change in Hydraulic Engineering (AKWAS) | DE | Prof. Fröhle | B-10 | EC | CM | 6 | Y | SA | | | |
| | 3 | Betrieb von öffentlichen Verkehrssystemen / Operation of Public Transportation Systems | DE | Prof. Gertz | W-8 | EC | CM | 6 | Y | SA | | | |
| | 3 | Emerging Trends in Environmental Engineering / Emerging Trends in Environmental Engineering | EN | Prof. Shokri | B-9 | EC | CM | 6 | Y | SA | | | |
| | 3 | Gewässerschutz / Water Protection | EN | Prof. Otterpohl | B-2 | EC | CM | 6 | Y | RE | | | |
| | 3 | Ländliche Entwicklung und Ressourcen Orientierte Sanitärsysteme für verschiedene Klimate / Rural Development and Resources Oriented Sanitation for different Climate Zones | EN | Prof. Otterpohl | B-2 | EC | CM | 6 | Y | FFA | | | |
| | 3 | Membran Technologie / Membrane Technology | EN | Prof. Ernst | B-11 | EC | CM | 6 | Y | KL | | | |
| | 3 | Modellierung von Prozessen in der Wassertechnologie / Process Modeling in Water Technology | DE / EN | Dr. Johannsen | B-11 | EC | CM | 6 | Y | KL | | | |

| | Module | | | | | | | Examination | | | Course Work | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Re-com. Term | Module Name (German / English) | Language | ModuleResponsability | Institute | C/EC (1) | CM/ OM (2) | CP (4) | Grade | Exami-nation Form(3) | Compulsory | Course Work Type | Bonus (in %) |
| | 3 | Siedlungswasserwirtschaftliches Praktikum / Practical Course in Water and Wastewater Technology | DE / EN | Dr. Rechtenbach | B-2 | EC | CM | 6 | Y | SA | | | |
| | 3 | Spezielle Aspekte des Abfallressourcenmanagements / Special Aspects of Waste Resource Management | EN | Prof. Kuchta | V-9 | EC | CM | 6 | Y | RE | Y | SA | 20 |
| | 3 | Subsurface Processes / Subsurface Processes | EN | Prof. Shokri | B-9 | EC | CM | 6 | Y | KL | | | |
| | 3 | Wasserressourcen und -versorgung / Water Resources and -Supply | DE | Prof. Ernst | B-11 | EC | CM | 6 | Y | KL | | | |
| | 3-4 | Ausgewählte Themen des Umweltingenieurwesens / Selected Topics in Environmental Engineering | DE / EN | Prof. Ernst | B-11 | EC | OM | 6 | Selection out of Catalogue below | | | | |
| | | | | | | | | | | | | | |
| **Specialisation Environment** Compulsory Courses: 42 LP Optional Courses: 24 LP | | | | | | | | | | | | | |
| | 1 | Abwasserreinigung und Luftreinhaltung / Wastewater Treatment and Air Pollution Abatement | DE / EN | Dr. Pietsch | V-3 | C | CM | 6 | Y | KL | | | |
| | 1 | Gewässerschutz / Water Protection | EN | Prof. Otterpohl | B-2 | C | CM | 6 | Y | RE | | | |
| | 1 | Umweltschutz und -management / Environmental Protection and Management | EN | Prof. Otterpohl | B-2 | C | CM | 6 | Y | KL | | | |
| | 1 | Kanalbau und Simulation / Construction and Simulation of Sewerage Systems | EN | Prof. Otterpohl | B-2 | EC | CM | 6 | Y | SA | N | RE | 20 |
| | 2 | Abfallbehandlung und Feststoffverfahrenstechnik / Waste Treatment and Solid Matter Process Technology | DE / EN | Prof. Kuchta | V-9 | C | CM | 6 | Y | KL | | | |
| | 2 | Elektrische Energie aus Solarstrahlung und Windkraft / Electrical Energy from Solar Radiation and Wind Power | DE | Dr. Höfer | V-9 | C | CM | 6 | Y | KL | | | |
| | 2 | Management von Oberflächenwasser / Management of Surface Water | DE / EN | Prof. Fröhle | B-10 | C | CM | 6 | Y | KL | | | |
| | 2 | Abwassersysteme / Wastewater Systems | EN | Prof. Otterpohl | B-2 | EC | CM | 6 | Y | KL | | | |
| | 2 | Advanced Vadose Zone Hydrology / Advanced Vadose Zone Hydrology | EN | Prof. Shokri | B-9 | EC | CM | 6 | Y | KL | | | |
| | 2 | Hydrologische Systeme / Hydrological Systems | DE / EN | Prof. Fröhle | B-10 | EC | CM | 6 | Y | KL | | | |
| | 2 | Ingenieurgeochemie / Geochemical Engineering | EN | Dr. Ritzkowski | SD-B | EC | CM | 6 | Y | KL | | | |
| | 2 | Marine Geotechnik / Marine Geotechnics | DE | Prof. Grabe | B-5 | EC | CM | 6 | Y | KL | | | |
| | 2 | Modellierung in der Wasserwirtschaft / Modeling in Water Management | DE / EN | Dr. Johannsen | B-11 | EC | CM | 6 | Y | MP | | | |
| | 2 | Multiphase Flow in Porous Media / Multiphase Flow in Porous Media | EN | Prof. Shokri | B-9 | EC | CM | 6 | Y | KL | | | |
| | 2 | Nexus Engineering - Wasser, Boden, Nahrung und Energie / Nexus Engineering - Water, Soil, Food and Energy | EN | Prof. Otterpohl | B-2 | EC | CM | 6 | Y | FFA | | | |

| | Module | | | | | | | Examination | | | Course Work | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Re-com. Term | Module Name (German / English) | Language | ModuleResponsability | Institute | C/EC (1) | CM/ OM (2) | CP (4) | Grade | Exami-nation Form(3) | Compulsory | Course Work Type | Bonus (in %) |
| | 2 | Prozessbildgebung / Process Imaging | EN | Prof. Penn | V-10 | EC | CM | 6 | Y | KL | | | |
| | 2 | Smart Monitoring / Smart Monitoring | EN | Prof. Smarsly | B-1 | EC | CM | 6 | Y | SA | | | |
| | 2 | Städtisches Umweltmanagement / Urban Environmental Management | EN | Dr. Rechtenbach | B-2 | EC | CM | 6 | Y | SA | | | |
| | 2 | Stadtplanung / City Planning | DE | Prof. Gertz | W-8 | EC | CM | 6 | Y | SA | | | |
| | 2 | Systemaspekte regenerativer Energien / System Aspects of Renewable Energies | DE | Prof. Kaltschmitt | V-9 | EC | CM | 6 | Y | KL | | | |
| | 2 | Water and Environment: Theory and Application / Water and Environment: Theory and Application | EN | Prof. Shokri | B-9 | EC | CM | 6 | Y | SA | | | |
| | 3 | Studienarbeit Umwelt / Study Work Environment | | Dozenten des SD B | B-2 | C | CM | 6 | Y | STA | | | |
| | 3 | Abfallbehandlungstechnologien / Waste Treatment Technologies | DE / EN | Prof. Kuchta | V-9 | EC | CM | 6 | Y | RE | Y | FFST | 0 |
| | 3 | Anpassung an den Klimawandel in der wasserbaulichen Praxis (AKWAS) / Adaptation to Climate Change in Hydraulic Engineering (AKWAS) | DE | Prof. Fröhle | B-10 | EC | CM | 6 | Y | SA | | | |
| | 3 | Emerging Trends in Environmental Engineering / Emerging Trends in Environmental Engineering | EN | Prof. Shokri | B-9 | EC | CM | 6 | Y | SA | | | |
| | 3 | Integrierte Verkehrsplanung / Integrated Transportation Planning | DE | Prof. Gertz | W-8 | EC | CM | 6 | Y | SA | | | |
| | 3 | Ländliche Entwicklung und Ressourcen Orientierte Sanitärsysteme für verschiedene Klimate / Rural Development and Resources Oriented Sanitation for different Climate Zones | EN | Prof. Otterpohl | B-2 | EC | CM | 6 | Y | FFA | | | |
| | 3 | Membran Technologie / Membrane Technology | EN | Prof. Ernst | B-11 | EC | CM | 6 | Y | KL | | | |
| | 3 | Modellierung von Prozessen in der Wassertechnologie / Process Modeling in Water Technology | DE / EN | Dr. Johannsen | B-11 | EC | CM | 6 | Y | KL | | | |
| | 3 | Siedlungswasserwirtschaftliches Praktikum / Practical Course in Water and Wastewater Technology | DE / EN | Dr. Rechtenbach | B-2 | EC | CM | 6 | Y | SA | | | |
| | 3 | Spezielle Aspekte des Abfallressourcenmanagements / Special Aspects of Waste Resource Management | EN | Prof. Kuchta | V-9 | EC | CM | 6 | Y | RE | Y | SA | 20 |
| | 3 | Subsurface Processes / Subsurface Processes | EN | Prof. Shokri | B-9 | EC | CM | 6 | Y | KL | | | |
| | 3 | Wasserressourcen und -versorgung / Water Resources and -Supply | DE | Prof. Ernst | B-11 | EC | CM | 6 | Y | KL | | | |
| | 3-4 | Ausgewählte Themen des Umweltingenieurwesens / Selected Topics in Environmental Engineering | DE / EN | Prof. Ernst | B-11 | EC | OM | 6 | Selection out of Catalogue below | | | | |

| | Module | | | | | | | Examination | | | Course Work | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Re-com. Term | Module Name (German / English) | Language | ModuleResponsability | Institute | C/EC (1) | CM/ OM (2) | CP (4) | Grade | Exami-nation Form(3) | Compulsory | Course Work Type | Bonus (in %) |
| | | | | | | | | | | | | | |
| **Specialisation Water** Compulsory Courses: 42 LP Optional Courses: 24 LP | | | | | | | | | | | | | |
| | 1 | Kanalbau und Simulation / Construction and Simulation of Sewerage Systems | EN | Prof. Otterpohl | B-2 | C | CM | 6 | Y | SA | N | RE | 20 |
| | 1 | Subsurface Processes / Subsurface Processes | EN | Prof. Shokri | B-9 | C | CM | 6 | Y | KL | | | |
| | 1 | Wasserressourcen und -versorgung / Water Resources and -Supply | DE | Prof. Ernst | B-11 | C | CM | 6 | Y | KL | | | |
| | 2 | Abwassersysteme / Wastewater Systems | EN | Prof. Otterpohl | B-2 | C | CM | 6 | Y | KL | | | |
| | 2 | Management von Oberflächenwasser / Management of Surface Water | DE / EN | Prof. Fröhle | B-10 | C | CM | 6 | Y | KL | | | |
| | 2 | Modellierung in der Wasserwirtschaft / Modeling in Water Management | DE / EN | Dr. Johannsen | B-11 | C | CM | 6 | Y | MP | | | |
| | 2 | Advanced Vadose Zone Hydrology / Advanced Vadose Zone Hydrology | EN | Prof. Shokri | B-9 | EC | CM | 6 | Y | KL | | | |
| | 2 | Hydrologische Systeme / Hydrological Systems | DE / EN | Prof. Fröhle | B-10 | EC | CM | 6 | Y | KL | | | |
| | 2 | Ingenieurgeochemie / Geochemical Engineering | EN | Dr. Ritzkowski | SD-B | EC | CM | 6 | Y | KL | | | |
| | 2 | Marine Geotechnik / Marine Geotechnics | DE | Prof. Grabe | B-5 | EC | CM | 6 | Y | KL | | | |
| | 2 | Multiphase Flow in Porous Media / Multiphase Flow in Porous Media | EN | Prof. Shokri | B-9 | EC | CM | 6 | Y | KL | | | |
| | 2 | Nexus Engineering - Wasser, Boden, Nahrung und Energie / Nexus Engineering - Water, Soil, Food and Energy | EN | Prof. Otterpohl | B-2 | EC | CM | 6 | Y | FFA | | | |
| | 2 | Prozessbildgebung / Process Imaging | EN | Prof. Penn | V-10 | EC | CM | 6 | Y | KL | | | |
| | 2 | Smart Monitoring / Smart Monitoring | EN | Prof. Smarsly | B-1 | EC | CM | 6 | Y | SA | | | |
| | 2 | Stadtplanung / City Planning | DE | Prof. Gertz | W-8 | EC | CM | 6 | Y | SA | | | |
| | 2 | Systemaspekte regenerativer Energien / System Aspects of Renewable Energies | DE | Prof. Kaltschmitt | V-9 | EC | CM | 6 | Y | KL | | | |
| | 2 | Water and Environment: Theory and Application / Water and Environment: Theory and Application | EN | Prof. Shokri | B-9 | EC | CM | 6 | Y | SA | | | |
| | 3 | Studienarbeit Wasser/ Abwasser / Study Work Water/ Waste Water | | Dozenten des SD B | B-2 | C | CM | 6 | Y | STA | | | |
| | 3 | Abwasserreinigung und Luftreinhaltung / Wastewater Treatment and Air Pollution Abatement | DE / EN | Dr. Pietsch | V-3 | EC | CM | 6 | Y | KL | | | |
| | 3 | Anpassung an den Klimawandel in der wasserbaulichen Praxis (AKWAS) / Adaptation to Climate Change in Hydraulic Engineering (AKWAS) | DE | Prof. Fröhle | B-10 | EC | CM | 6 | Y | SA | | | |

| | Module | | | | | | | Examination | | | Course Work | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Re-com. Term | Module Name (German / English) | Language | ModuleResponsability | Institute | C/EC (1) | CM/ OM (2) | CP (4) | Grade | Exami-nation Form(3) | Compulsory | Course Work Type | Bonus (in %) |
| | 3 | Emerging Trends in Environmental Engineering / Emerging Trends in Environmental Engineering | EN | Prof. Shokri | B-9 | EC | CM | 6 | Y | SA | | | |
| | 3 | Gewässerschutz / Water Protection | EN | Prof. Otterpohl | B-2 | EC | CM | 6 | Y | RE | | | |
| | 3 | Integrierte Verkehrsplanung / Integrated Transportation Planning | DE | Prof. Gertz | W-8 | EC | CM | 6 | Y | SA | | | |
| | 3 | Ländliche Entwicklung und Ressourcen Orientierte Sanitärsysteme für verschiedene Klimate / Rural Development and Resources Oriented Sanitation for different Climate Zones | EN | Prof. Otterpohl | B-2 | EC | CM | 6 | Y | FFA | | | |
| | 3 | Membran Technologie / Membrane Technology | EN | Prof. Ernst | B-11 | EC | CM | 6 | Y | KL | | | |
| | 3 | Modellierung von Prozessen in der Wassertechnologie / Process Modeling in Water Technology | DE / EN | Dr. Johannsen | B-11 | EC | CM | 6 | Y | KL | | | |
| | 3 | Siedlungswasserwirtschaftliches Praktikum / Practical Course in Water and Wastewater Technology | DE / EN | Dr. Rechtenbach | B-2 | EC | CM | 6 | Y | SA | | | |
| | 3 | Spezielle Aspekte des Abfallressourcenmanagements / Special Aspects of Waste Resource Management | EN | Prof. Kuchta | V-9 | EC | CM | 6 | Y | RE | Y | SA | 20 |
| | 3-4 | Ausgewählte Themen des Umweltingenieurwesens / Selected Topics in Environmental Engineering | DE / EN | Prof. Ernst | B-11 | EC | OM | 6 | Selection out of Catalogue below | | | | |
| | | | | | | | | | | | | | |
| **Thesis** | Compulsory Courses: 30 LP Optional Courses: 0 LP | | | | | | | | | | | | |
| | 4 | Masterarbeit / Master Thesis | | Professoren der TUHH | 0-TUHH | C | CM | 30 | Y | AB | | | |

# Selected Topics in Environmental Engineering

| Course | | | | | Examination | | | |
|---|---|---|---|---|---|---|---|---|
| Course Name (German / English) | Course Form LV(5) | Language (6) | SWS (7) | Sem. LV | CP (4) | Grade | Examination Form(3) | Additional information |
| Aquatische Umweltchemie / Environmental Aquatic Chemistry | VL | EN | 2 | SoSe | 3 | Y | KL | |
| Exzellenz im Internationalen Projektgeschäft / Excellence in International Project Delivery | IV | EN | 2 | SoSe | 2 | N | lt. FSPO | |
| Schlammbehandlung / Sludge Treatment | VL | EN | 2 | SoSe | 3 | Y | KL | |
| Thermische Biomassenutzung / Thermal Biomass Utilization | VL | DE | 2 | WiSe | 2 | Y | KL | |
| Thermische Biomassenutzung / Thermal Biomass Utilization | GÜ | DE | 1 | WiSe | 1 | Y | KL | |

Explanation:
[1]C=Compulsory, EC=Elective Compulsory
[2]CM=Compulsory Defined Module, OM=Optional Defined Module
[3]KL=Written exam, SA=Written elaboration, FFA=Subject theoretical and practical work, FFST=Subject theoretical and practical work, MP=Oral exam, RE=Presentation, STA=Study work, AB=Thesis, SA lt. FPrO=Written elaboration (accord. to Internship Regulations), lt. FSPO=according to Subject Specific Regulations
[4]CP=Credit Points
[5]VL=Lecture, SE=Seminar, GÜ=Recitation Section (small), PBL=Project-/problem-based Learning, PR=Practical Course, PS=Project Seminar, HÜ=Recitation Section (large), IV=Integrated Lecture
[6]DE=German, EN=English, DE/EN=German and English
[7]SWS=Contact hours