Information for the Summer School:

Water Management in Cold regions
THT312 – 2020

Co-convenors: This course is a result of an already long-lasting international academic cooperation supported by the Norwegian Agency for International Cooperation and Quality Enhancement in Higher Education (DIKU). Due to the current Coronavirus (COVID-19) pandemic, the organisation team decided to arrange this years Summer school as a complete web-based teaching event. The following Universities are contributing to the web-based version of the Summer school: Norwegian University of Life Sciences (NMBU, lead partner), University of Alberta, University of Alaska, Technical University of Denmark (DTU), Northern State Medical University (Russia) and Harbin Institute of Technology (HIT), China.

Motivation: Globally, circum-Arctic regions are seeing the most dramatic climate change related impacts. Changes have notable impacts on the environment as well as the the High North communities. These include retreat of sea- and glacial-ice coverage, increased erosion at coastlines, loss of permafrost damaging buildings and piped infrastructure as well as ecosystem changes. However, these changes will also make the region increasingly accessible for economic development, e.g., resource extraction and tourism. Similar changes are also observed in non-Arctic regions with ambient average temperature below 10 ºC (cold regions). Thus, all local communities and municipalities located in cold regions are facing tremendous challenges when it comes to adjustments in infrastructure and planning of new technological solutions on restricted budgets.

Today, drinkingwater and sanitation systems in Arctic regions are under serious pressure. Sanitation systems range from the application of mechanical wastewater treatment plants to passive treatment systems consisting of waste stabilization ponds (WSPs), natural or engineered wetlands, and composting or bucket toilets. In many of the poorer communities human excreta/wastewater receives no treatment. Melting permafrost zones add increasing vulnerability to physical structures and community-based water services, which are compounding problems derived from various sociological changes in the High-North. Poor sanitary conditions often combined with inadequate water supply give rise to (enteric, skin and respiratory) infectious diseases which ultimately add up with other Arctic environmental and societal health issues. Hence, community water and sanitation is a major health-related priority.

Discharge of wastewater into the vulnerable ecosystems in the Arctic often require different technologies or system designs than those used in warmer climates. Currently, limited information exists about water handling facilities in the Arctic, resulting in considerable uncertainties about the performance and environmental sustainability of existing or potentially different future systems. Changing paradigms aspiring to closed-loop systems and economies also need to be considered for water and sanitation services, such as resource recovery for energy, nutrients, water, which could also support agricultural enterprises – yet many institutional, governance and capacity barriers inhibit this change. The course will also include a current update on handling the COVID-19 issue in relation to Arctic water sanitation and health (WASH).

Who can attend: This summer school invites graduate level students, consultants and regulatory experts alike who intend to achieve relevant scientific, engineering and administrative knowledge and up-dated expertise for the sound development of suitable solutions for water treatment technologies under the harsh climate conditions of the high north.

Location: Due to the Coronavirus pandemic, the course will be conducted as a web-based e-learning course. The learning platform CANVAS as well as Zoom will be utilized for student-teacher interactions. Links will be provided to the participants for online webinars. Any further information can be requested with an email to siddhartha.pandey@nmbu.no.

About the course: The teachers come from Alaska, Canada, Denmark(Greenland), Russia, China and Norway. The teaching will consist of a series of webinars, interactive discussion fora, quizzes and webinars. The concept combines academic multi-media-based teaching with individual and group work solving relevant exercises and cases. The course starts June 3rd and terminates June 19th . The first week you will have full day engagement where we go through the key aspects of the course. This will start with a common introduction each morning (for those in Europe) and later a common discussion and summary sessions. The two consecutive weeks (June 8th through June 19th) there will be two to four introductory sessions (e.g. Monday, Wednesday, Friday) and 2-4 common discussion and summary sessions. All lectures and common meetings will be taped so it will be possible to listen if you are in a different time zone or for some other reason can not be present during the live presentation . In addition there will be group work and we will try to tailor the corresponding sessions with teachers involved to the different time zones (America, Asia). The last day of the course (June 19th) you will have a multiple choice exam that counts 50%. The remaining 50 % of your grade will be based on a term paper that you have to submit by June26th. The course is exploring new didactical methods and an open source digital database supporting the course is already available (https://sswm.info/perspective/arctic-water-sanitation-and-health-arctic-wash). Take a look!. You also find information about the course on the university website: https://www.nmbu.no/course/THT312, but this information is not yet tailored to the digital version of the course.

Credits: All that pass the exam will be rewarded 5 ECTS credits and a transcript from he Norwegian University of Life Sciences (NMBU)

Application: The number of participants is limited. In order to be accepted you have to provide a short overview of your educational/professional background. In addition you should state your motivation for the course. This information you fill in through the link: https://form.nmbu.no/view.php?id=677073. The educational background and motivation letter should be submitted as soon as possible and at the latest by May 15th.
To formally be accepted by the university and receive your credits you also have to fill in the form attached. You find the form in word format on the university website: https://www.nmbu.no/en/studies/exchange/apply-for-exchange/outside-europe at the latest by May 15th.
WE SUGGEST THAT YOU SEND YOUR APPLICATION AS SOON AS POSSIBLE AND IN DUE TIME BEFORE MAY 15th

Attendance costs: The cost for the course will be a semester fee of 470* NOK.

For formal and technical details contact: Siddharta Pandey: siddhartha.pandey@nmbu.no
For information on course content contact : Petter D. Jenssen: petter.jenssen@nmbu.no

*Optionally you can add 40 NOK to support the SAIH (Students and Academics Interantional Help Fund).

Sewage lagoon at the Setermoen rapid infiltration system (69° north) receiving sewage from 5000 persons. The system has shown excellent performance over the last 30 years.

Efficient mechanical wastewater treatment at the city of Tromsø, Norway (70 000 people).

Attachments:

1. Application form in pdf format. Note that the application deadline for this course is May 15th.
2. Language requirements.

Non-degree studies, Bilateral or Nordplus

Erasmus students, please use the application form for Erasmus exchange

Norwegian University of Life Sciences

Norwegian University of Life Sciences (NMBU)
Admission Office
P.O. Box 5003
N-1432 Aas
Norway
Fax: +47 6496 6021

Deadlines for application are:

April 1. for the Autumn semester (begins August), including a priority for accommodation if accepted.
October 1. for the Spring semester (begins January)

Name student:

Academic Year: /

When do you intend: a. to begin your studies at NMBU (dd mm yy) - -

b. to end your studies at NMBU (dd mm yy) - -

DETAILS SENDING (HOME) INSTITUTION
Name of University:
Country:
Contact person (exchange coordinator) sending university:
E-mail address:

PERSONAL DATA **Important:** Please provide your private home address (inclusive postal code), and not the address of your home university or other institution.	
Family name:	
Given name(s):	
Date of Birth: - -	Place of Birth:
Nationality:	Sex:
Current Address: Tel: +	Contact Address (if different): Tel: +
E-mail:	
I am coming to NMBU through the following programme: Bilateral Agreement: ( ) Nordplus: ( ) Other, please specify:	

STUDY PROGRAMME AT HOME INSTITUTION
Diploma or degree for which you are currently studying:
Main subject, field or major of degree/diploma:
Number of years of study so far: years BSc years MSc other (specify)

LANGUAGES			
Mother tongue:	Other languages:		
Please note that your level in English language needs to be sufficient in order to be able to attend courses. The requirement for exchange students is regulated by the current exchange agreement between NMBU, otherwise TOEFL score of 500 or equivalent is required.			
English writing	Sufficient ☐	Good ☐	Very Good ☐
Reading	Sufficient ☐	Good ☐	Very Good ☐
Speaking	Sufficient ☐	Good ☐	Very Good ☐

COURSE SELECTION AT NMBU

Please select 50-60 ECTS per semester in case courses are full or the applicant does not meet the pre-requisites. Courses should be listed in order of preference.

Course code	**Course title** (as indicated in the course catalogue)	**Semester**	**Number of ECTS credits**

CHECK LIST *(Without these document the application will not be taken into consideration)*

All documents can be sent by email by the applicant's sending (home) institution.

☐ I have enclosed transcript of my university records

☐ I have enclosed an overview of my academic program, including courses I am currently enrolled in.

☐ I have enclosed a copy of passport (the pages with name, photo ands expiry date)

☐ I have familiarised myself with the immigration process (www.udi.no)

☐ I will need accommodation and understand that: - *Accommodation can only be booked from the beginning of each semester. This means that I will be required to pay rent from either August 01 or January 02 even if I arrive later. The minimum contract period is 3 months.*

I hereby confirm that the above information is correct. I understand that admission to the Norwegian University of Life Sciences as an exchange student is for maximum one year only and does not constitute admission to any regular degree programme.

_____ _____

Place and date Signature

Language requirements

NMBU offers courses taught in English and Norwegian. The English courses require one of the English levels listed below (Please do also see the Higher Education Entrance Qualification for Persons with Foreign Education - The GSU-list), and the Norwegian courses require documented fluency in Norwegian, Danish or Swedish. Students should choose courses relevant to their academic background and see if they meet the course prerequisites before applying. Teaching language and course prerequisites are specified in each course description in our course catalogue.

Applicants who are not native speakers of English must document their proficiency in English with one of the following tests:

- Test of English as a Foreign Language (TOEFL) with a minimum score of 500 for a paper based test (PBT), or minimum 60 on an internet-based test (IBT).
- International English Language Testing Service (IELTS), academic, with a minimum score of 5.0.
- Applicants with Norwegian upper secondary school: Foundation/level 1 course in English at upper secondary school (140 hours) with the mark 2 or better.
- *Please note that a TOEFL or an IELTS test cannot be more than two years old.*
- Pearson PTE Academic test with a minimum score of 51 points.
- University of Cambridge examinations:

1. First Certificate in English
2. Certificate in Advanced English
3. Certificate of Proficiency in English

In some cases, applicants can document English proficiency in other ways. Please see the Norwegian Agency for Quality Assurance Education to find out about other ways to document English language proficiency.