

PRELIMINARY PROGRAM:

## Course invitation: Appropriate sanitation in the developing world

Worldwide, two of the major causes of mortality and morbidity are unsafe water supplies and inadequate disposal of human excreta. Sanitation inadequacies also hinder economic and social development, constitute a major impediment to reducing poverty, and inevitably lead to degrading the environment. Unfortunately, the people in poverty stricken areas – especially infants and young children – suffer the most. This calls for appropriate solutions that are affordable considering local constraints.



NLH-Campus

The focus of this course is to explore ecological solutions for developing countries. Specifically, recycling and low-tech waste treatment systems will be examined in depth. Five case-studies will be presented by sanitation specialists, followed by in-depth analysis of associated issues – both technical and social. The range of case studies covers Asia, Africa and Latin America. And the scope of analysis offered by engineers, scientists, and public officials is wide and timely.

### Target group

The course is designed for both the professional and student. Its purpose is two-fold: (1) to illustrate how ecological sanitation is applied in developing countries, and (2) to explain, in-depth, the principles of ecological engineering. Participants are expected to include professionals from consulting firms (e.g. civil engineers), NGO personnel (field and administrative), public officials (e.g. health and foreign service), research scientists, and students from various disciplines.

The course takes place at the Agricultural University of Norway, Ås, 30 km from Oslo.

**All presentations are in English.**



**Course responsible:**  
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## Participating Organizations

- Agricultural University of Norway
- The Swedish University of Agricultural Sciences
- Swedish Institute for Infectious Disease Control
- Médecins Sans Frontières (MSF)
- Norwegian Church Aid (NCA)
- The Centre for International Environment and Development Studies, Norway
- International Ecological Engineering Society

# Course schedule

## Monday, June 2

**Case study:** EcoSan public toilets for the slums of Bangalore

**Technical issues:** Composting of faecal matter Urine-separating systems

**Social issues:** Participatory decision-making Influence of gender and religion

## Tuesday, June 3

**Case study:** Solar powered vacuum toilets and onsite greywater treatment in Havana

**Technical issues:** Blackwater collection - vacuum systems

Aerobic and anaerobic treatment of organic waste and blackwater

Production of organic fertilizer and energy from waste

**Demonstrations:** Integrated vacuum toilet and greywater treatment

Agricultural application of slurry waste via Direct Ground Injection

## Wednesday, June 4

**Case Study:** Two solutions for South Africa - urine-separating toilets & greywater treatment

**Technical issues:** Low-tech toilet design Greywater treatment

**Social issue:** Thresholds of hygiene

## Thursday, June 5

**Case study:** Ponds and constructed wetlands for treating wastewater in Sri Lanka

**Technical issues:** Treating excreta for aquaculture Designing constructed wetlands

**Social issues:** User acceptance Economic of sanitation

## Friday, June 6

**Case study:** Sanitation under stress - establishment of safe sanitation under refugee influx

**Technical issues:** Emergency relief systems Pit latrines, composting- and dehydration toilet systems Infiltration systems

**Social issues:** Culture shock Lessons learned from refugee camps

## Time and Location

The course takes place daily 9:00 – 16:00 on the campus of the Agricultural University of Norway, Ås, Norway, 30 km south of Oslo. All lectures will be held at the Institute for Agricultural Engineering.

### Course Credit

Students completing the entire course, including assignments, will be awarded one Norwegian course-credit. Other participants will be awarded a course diploma.

### Accommodations and Meals

It is recommended that participants from outside Scandinavia arrive on Sunday evening, June 1.

**Pentagon Dormitory**, 5-minute walk to lecture hall  
single room/night (breakfast not included) NOK 450

**Ås Hotel**, 20-minute walk to lecture hall  
single room/night (includes breakfast) NOK 635

**For students only:** Free classroom space for sleeping is available. You need to bring your own sleeping bag. Showers are available. Reservation required by May 15.

Meals are not included in the registration fee. Cold lunches are available in the lecture hall cantina. Dinners are available at restaurants in Ås (15-minute walk), Drøbak (10-km from campus), Ski (10-minutes by train or bus) and Oslo (30-minute by train).

### Course Fee (does not include accommodation and meals)

Individual NOK 3200

Student NOK 750

For those who wish to attend only a portion of the course, the daily fee is NOK 750.

### Return Registration Coupon to:

**Petter Jenssen**, Dept. of Agricultural Engineering  
Agricultural University of Norway  
PO Box 5065, N - 1432 Aas, Norway  
FAX: +47 6494 8810

Registration is final. A charge of NOK 1000 will be made for cancellations. Full course fees will be charged for non-attendance. An invoice for course fees will be sent with a confirmation of registration.

**Questions on course content** can be directed to  
e-mail: sansol@nlh.no. www.nlh.no/sansol

## Appropriate sanitation in developing world Ecological solutions

June 2 – 6, 2003 The Agricultural University of Norway, Ås

Complete name: \_\_\_\_\_

Institution: \_\_\_\_\_

Address: \_\_\_\_\_

Code: \_\_\_\_\_

Town: \_\_\_\_\_

Country: \_\_\_\_\_

Daytime phone: \_\_\_\_\_

**Fax:** \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Entire course registration, June 2-6

Daily registration

Monday, June 2

Tuesday, June 3

Wednesday, June 4

Thursday, June 5

Friday, June 6

CATEGORY

Student

Individual

Engineer

Administrator

Teacher

Scientist

Other

ACCOMMODATION

University Dormitory

Ås Hotel

Classroom

Arrival: day \_\_\_\_\_ time: \_\_\_\_\_ Departure: day \_\_\_\_\_ time \_\_\_\_\_