

Courses at NTNU NanoLab

End of November 2011 – March 2012

To apply for a course at NTNU NanoLab:

- Send an application via e-mail to nanolab@ntnu.no *at least five working days before the course starts.*
- For each course you want to attend, send an email with the subject “Training request for <course name>”. A separate mail has to be sent for each course to make sure that the automated system delivers the email to the correct engineer.
- For instrument courses, the email body must include the answers to the 8 questions below.
- Information about course place and time will be sent out to all participants after the application deadline.

Due to limited capacities, instrument courses will be given only to applicants who already have a NanoLab activity, or will start one within approximately one month from the course date. Additional courses will be arranged on a short time basis if there are more applicants than available places.

For all instrument courses, please answer the following questions in your course application. We need the information to be able to determine whether or not the instrument is suited for your samples, and your need for a course. Please give short and clear answers and do not send an abstract of your research project.

1. What do you intend to do with the instrument you request training for?
2. What kind of material/samples are you working on? Please describe the sample size and properties (e.g. magnetic, non-conducting, type of solvent if any).
3. Do you have previous experience with similar instruments/processes? If yes, how would you describe your level of experience? How often and for how long have you used such techniques/instruments before?
4. How often do you intend to use the instrument in question in NanoLab (!) in the near future (e.g. once a week, once a month, in the range of every third month)?
5. How long will your project at this instrument last (e.g. 1 month, 1/2 year, 3 years).
6. When will your work at this instrument start (e.g. directly after training, in 2 weeks, in 2 months, etc.)
7. Do you already have an activity in NTNU NanoLab? If yes, what is your activity number?
8. Have you taken the NanoLab cleanroom introduction and HSE course?

We will only be able to give a very limited amount of courses in January. Please contact us if your need is urgent.

For information about our different instruments, please visit www.norfab.no.

Cleanroom introduction course (2 day course)
Part I - Introduction + HSE + practical training (3h)

Part II - Rules, Regulations and Procedures (3h)

Date: 22nd + 23rd of November, 31st of January + 1st of February, 21st + 22nd of February, 13th + 14th of March (attendance both days is mandatory)

Available places: Unlimited, but divided into groups of 6 for the practical training.

Comment: This course is **mandatory** to get unsupervised access to the cleanroom. Part I is given the first day, Part II is given the second day.

General introduction course for the lithography area

Date: 28th of November, 6th of February, 5th of March

Available places: 12

Comment: This course is **mandatory** for all users who want to work in the lithography area.

General photolithography course

Date: 30th of November, 8th of February, 7th of March

Available places: 6

Comments: On the basis of a simple process, this course will show very general what photolithography means and what it can be used for. It is for those who have no previous experience with lithography processes, and is not mandatory. This is not a chemical introduction course!

HF-course

Date: 29th of November, 7th of February, 6th of March

Available places: 5

Comment: This course is **mandatory** for all users who want to work with HF.

Mask aligner MA56

Date: 6th of December, 7th of February, 6th of March

Available places: 6

Ultracentrifuge

Date: 30th of November, 8th of February, 7th of March

Available places: 3

RTP

Date: 24th of November, 2nd of February, 1st of March, 29th of March

Available places: 3

NanoSight

Date: Date: 30th of November, 8th of February, 7th of March

Available places: 3

Particle Size Analyser

Date: 30th of November, 8th of February, 7th of March

Available places: 3

Microwave-oven

Date: 15th of December, 23rd of February, 22nd of March

Available places: 3

Autoclave

Date: 15th of December, 23rd of February, 22nd of March

Available places: 3

EBL

Date: 22nd of November, 31st of January, 28th of February, 27th of March
Available places: 4
Comment: The course in November only has 2 places.

PECVD

Date: 25th of November, 3rd of February, 2nd of March, 30th of March
Available places: 3

RIE / ICP-RIE

Date: 6th of December, 17th of January, 14th of February, 13th of March
Available places: 3

E-beam evaporator

Date: 5th of December, 16th of January, 13th of February, 12th of March
Available places: 4

Veeco AFM

Date: 8th of December, 19th of January, 9th of February, 8th of March
Available places: 2

NanoSurf AFM/STM

Date: 7th of December, 18th of January, 8th of February, 7th of March
Available places: 2

NanoSurf FlexAFM

Date: Date: 14th of December, 22nd of February, 21st of March
Available places: 3

S(T)EM

Date (theoretical introduction): 5th of December, 13th of February
Date (practical session): 7th of December, 14th of February, 15th of February
Available places: 2 (for each practical session)
Comment: Participation in the theoretical introduction course is mandatory for participation in the practical “hands-on” session.

FIB

Date (theoretical introduction): 5th of December, 12th of March
Date (practical sessions): 7th of December, 13th of March, 15th of March
Available places: 2 (for each practical session)
Comment: Participation in the theoretical introduction is mandatory for participation in the practical “hands-on” session.

Small sputterer/evaporator

Date: 7th of December, 18th of January, 15th of February, 14th of March
Available places: 4

For all other instruments in the cleanroom training is provided on demand. For practically all instruments, also those not in this list, at least a short introduction is required before use. Always ask an engineer whether a certain instrument needs training or not.

- *Plasma cleaner*
- *Profilometer*
- *Table top SEM*
- *Maskaligner in student area (MJB3)*
- *Wafer saw*
- *Scriber*
- *UV/Ozone-cleaner*
- *Calcination oven*
- *Tabletop centrifuge*
- *Dip coater*
- *Electrophoreses*
- *Ovens*
- *Scales*
- *Laminar Air Flow benches*
- *pH-meter*
- *Spin coater*
- *Ultrasonic baths*
- *Ultrasonic probe*
- *Glove boxes*
- *Surface Plasmon Resonance instrument*
- *Microscopes (fluorescence, DIC, stereo, etc)*
- *SEM sample preparation sputter coater*
- *Wire-bonder*