

# Courses at NTNU NanoLab

## August – December 2020

- Signing up for “Cleanroom course” and “Chemical introduction course”: Send an email to [nanolab@ntnu.no](mailto:nanolab@ntnu.no) at least 5 working days before the course.
- Signing up for other courses: Click “Apply” in LIMS to apply for instrument license/area course at least 5 working days before the course starts. If you are not a LIMS user, register at [ntnu.norfab.no](http://ntnu.norfab.no)
- Information about course place and time is sent out to all participants 5 working days before the course.
- Applicants who have sent in an activity form are prioritized for instrument courses. When starting an activity, we will tell you which courses you need, in case you are uncertain. Please see [ntnu.norfab.no](http://ntnu.norfab.no) on how to start an activity. No login required.
- Extra course occasions may be added if many users apply for training.

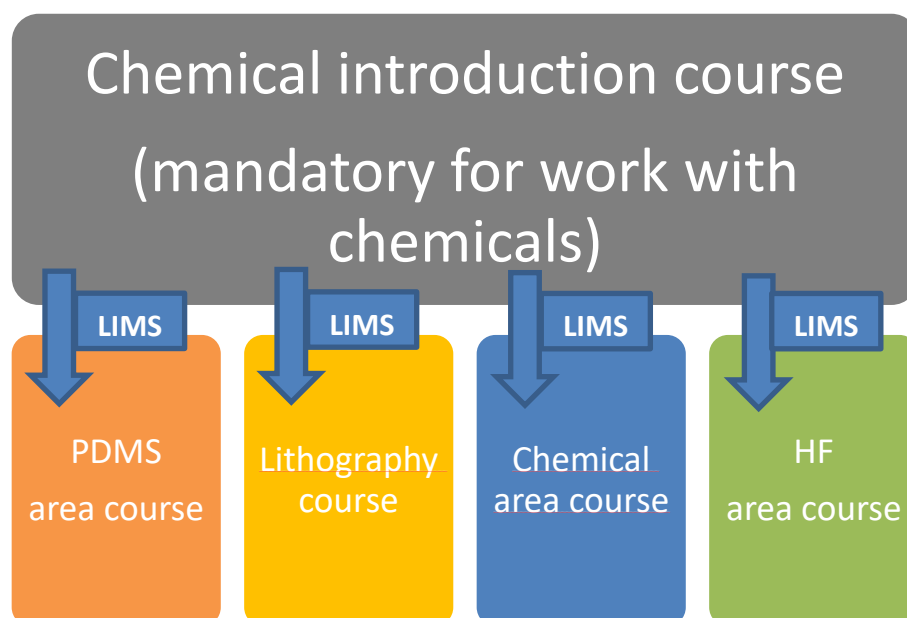
### Cleanroom course

Due to COVID-19 regulations, we will be doing smaller group size for the cleanroom tours. As we expect a lot of new users at the beginning of the semester, the course will be on demand the first weeks starting in week 34.

Dates: September 29<sup>th</sup>, October 20<sup>th</sup>, November 10<sup>th</sup> and December 1<sup>st</sup>. Mandatory for all new users.

## Chemical introduction course

Storage, waste handling and administrative guidelines. Mandatory if you are going to use chemicals. This is an online course.



## *Area courses*

After an area course, you know where to find everything you need in the area, and special working procedures in that area. It is mandatory to work in an area.

### Lithography area course

Date: 22/9, 2/11

Duration: Full work day

Part 1: Theory session 08:30 -11:00

Part 2: Area Tour 11:00- 12:00

Part 3: Practical session 13:00 – 15:00

Comment: All parts are mandatory for work in the lithography, wet-etch or lift-off area. Participation in the chemical introduction course is a prerequisite. The course will only be held if the minimum number of participants is fulfilled.

### PDMS-area course

Date: 2/9, 23/9, 14/10, 4/11, 25/11, 16/12

Duration: 0.5 hours

Comment: Mandatory for work with siloxanes (PDMS) and silanes. Participation in the chemical introduction course is a prerequisite.

### Chemical area course

Date: Scheduled on request

Duration: 1 hour

Comment: Mandatory for work in the chemical area. Participation in the chemical introduction course is a prerequisite, but exceptions might apply for some of the characterization tools.

## *Chemistry courses*

Intensive courses to make your chemistry work safer and more efficient.

### HF course

Date: 31/8, 28/9, 26/10, 23/11, 15/12

Duration: Duration: 3 hours (theory and practical session) + 1 hour practical exam

Comment: Mandatory for work with hydrofluoric acid. Participation in the chemical introduction course is a prerequisite.

### HF buddy course

Date: Same as for HF course

Duration: 3 hours (theory and practical session)

Comment: This course will not give you license to work with HF, but is mandatory if you want to be buddy for someone working with hydrofluoric acid. Participation in the chemical introduction course and the lithography area course is a prerequisite.

### Wet etch course

Date: Scheduled on request

Duration: 0.5 hours

Comment: Mandatory for work with wet etches other than HF. Participation in the chemical introduction course and the lithography or chemical area course is a prerequisite.

## ***Instrument courses***

Most instrument courses are scheduled on request, but the following are pre-scheduled. Extra course occasions may be added if there are many applicants.

For more information about all our different instruments, please visit [ntnu.norfab.no](http://ntnu.norfab.no).

### **AFM, Dimension ICON**

Date: 19/8, 9/9, 30/9, 30/10, 21/10, 11/11, 2/12

Duration: 3-4 hours

### **AJA sputter and evaporator**

Date: 19/8, 16/9, 14/10, 11/11

Duration: 5 hours

### **Electron beam lithography (Elionix)**

Date: 25-26/8, 15-16/9, 6-7/10, 27-28/10, 17-18/11

Duration: 5 hours for two days. First day is training. Second day is self-training.

### **Focused Ion Beam (FIB G2 - Elsa)**

Date: 17-18/8, 7-8/9, 28-29/9, 19-20/10, 21-22/10, 9-10/11, 30/11 – 01/12

Duration: 4+4+1 hours of practical sessions

### **Maskless aligner MLA 150**

Date: 18/8, 8/9, 29/9, 20/10, 10/11, 2/12

Duration: 2 hours

### **SEM APREO**

Date: On request

Duration: 4 hours

### **Micro-Raman spectroscope**

Date: 26/8, 8/9, 23/9, 7/10, 20/10, 4/11, 18/11, 1/12, 16/12

Duration: 2 hours

### **Nanosight**

Date: 25/8, 15/9, 6/10, 27/10, 17/11, 8/12

Duration: 3 hours

### **Particle size analyzer**

Date: 25/8, 15/9, 6/10, 27/10, 17/11, 8/12

Duration: 1 hour

### **RTP**

Date: 26/8, 16/9, 8/10, 28/10, 18/11, 9/12

Duration: 2-4 hours, depending on process

### **S(T)EM**

Date: TBA

Duration: 3+2+1 hours of practical sessions

### **NanoDrop UV-Vis**

Date: 26/8, 16/9, 8/10, 28/10, 18/11, 9/12

Duration: 1 hour

### **Drop Shape Analyzer (DSA)**

Date: 19/8, 9/9, 30/9, 30/10, 21/10, 11/11, 2/12

Duration: 3 hours

## **Other instruments**

Courses for all other instruments are scheduled on request.