

New user's training procedure in an open academic platform: LAAS-CNRS example

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Outline :





8 Scientific departments
4 Main applicative axis



Laboratory for Analysis and Architecture of Systems

- **Personnel : 592**
 - Research : 208
 - Technical administrative support : 102
 - PHD - Post doc : 226
 - Others Temporary : 56

- **50+** PhD thesis defended /year

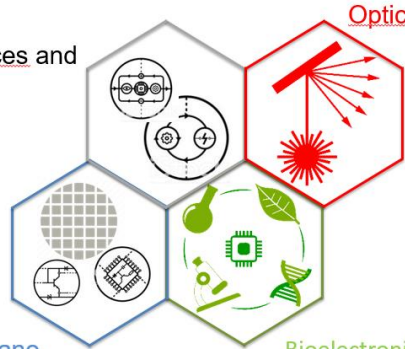
- Offices and experimentations **22 000 m²**

4 Technological platforms

- Robots
- Design
- Characterization
- **Micro and nano fabrication**

Open academic platform for micro- and nanotechnology-related projects

Micro nano devices and systems



Micro nano electronics

Bioelectronic, biosystems, biophysics

Optics & Photonics



- Member of French Renatech Network
 - <https://www.renatech.org/en/>
- Apply for your project
 - <https://www.renatech.org/projet/index/en>

- 1600m² clean room
- 200+ users
- 150 projects/year (half exogenous)
- 35M€ equipment
 - <https://lims.laas.fr/Default.aspx>
- Managed by TEAM technical staff
 - 31 engineers , technicians
 - Contact : renatech@laas.fr

7300 m²
of clean rooms

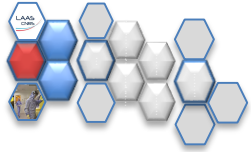
140
clean room
engineers
and technicians

130 M€
of EQUIPEMENT

5 FACILITIES



The context



Large number of users



Different origin, levels, needs, skills

Lot of turnover



Our objectives



Safety:

hazardous chemical
potentially dangerous tools



Autonomy :

work with maximum efficiency
increase knowledge



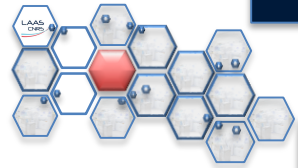
Contamination risks :

raise awareness clean room rules
avoid cross contaminations (MOS/MEMS)



Hybrid training

Modulable
Interactive
« more
entertaining
offer »
Upgradable



Online learning platform

Support for trainings
Distance learning tools
Suitable for small groups and large promotions

Learning environment

Manages training resources
Promotes exchanges and interactions
Combines interactive learning activities
Quality system, allows evaluation, traceability

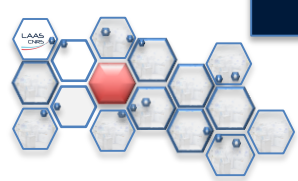
Toulouse University Moodle access :

<https://moodle.univ-tlse3.fr/>



Votre plate forme pédagogique de travail, votre espace de formation en ligne





Educational approach

Resources Management

Online Editor

Different types of resources

Files : pdf, ppt, image, videos, zip,...

Links public website or public files on internet

Folders

Communication

Forum, IM, survey, wiki

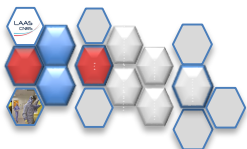
Working groups

Quality

Online evaluation test

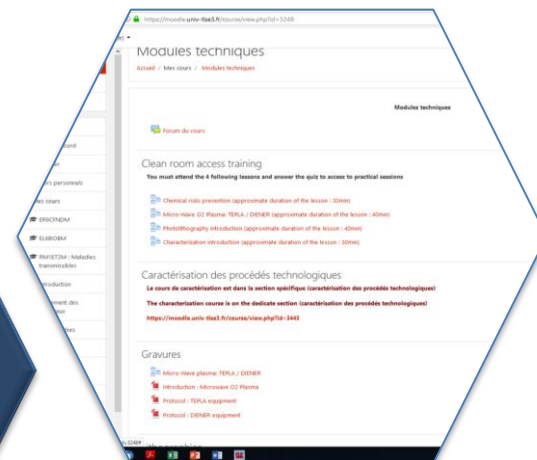
traceability

The Training procedure



1
General Training
(Monthly)

2
e-learning session

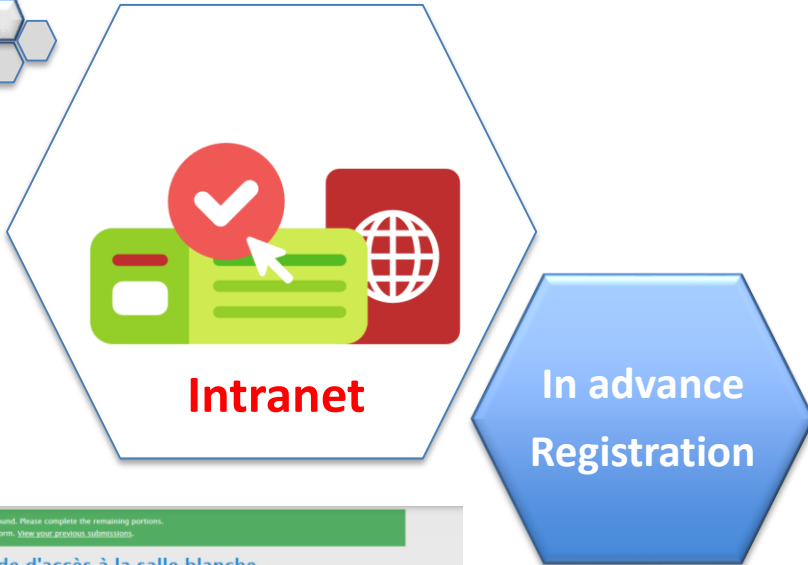
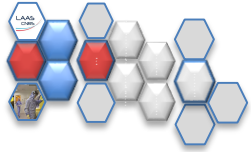


4
Annual lectures

3
Practical trainings
(2x per month)



Registration



In advance steps :
Human resources (contracts)
Lab access (email, intranet)

Training organization :
At arrival or later
Intranet request form
Take about 1 week

Registration :
Platforms ID (Renatech, MyFab, Moodle)
Training schedule

A partially-completed form was found. Please complete the remaining portions.
 You have already submitted this form. [View your previous submissions.](#)

TEAM : demande d'accès à la salle blanche
 Demande d'accès à la plateforme de micro et nanotechnologies
 Application form to access to the micro and nanotechnologies platform

• VALIDATION / APPLY : grater@laas.fr et dilhand@laas.fr
 • Tous les champs marqués d'un * sont obligatoires / All fields marked with * are mandatory
 • Documents à lire avant de remplir le formulaire / Documents to read before filling the form
 1. Informations sur l'utilisation de la plateforme / Informations about the platform use
 2. Informations relatives à la collecte de nos données / Personal data collection information

Informations personnelles / personal data

Nom/Name *
 Mazing

Prénom/Firstname *
 Laurent

Diplôme le plus élevé / Highest diploma *

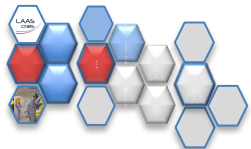
Spécialité du diplôme / Speciality of this diploma *

Date d'obtention du diplôme / Date of graduation *
 Jour -> Mois -> Année -> [calendar icon]

Courriel professionnel / professional email
 laurent.mazing@laas.fr

Téléphone professionnel/Professional phone

1- General Training



1
General
Training
(Monthly)

Platform presentation :

What is a clean room?

Technologies

The platform organization

Rules in the clean room

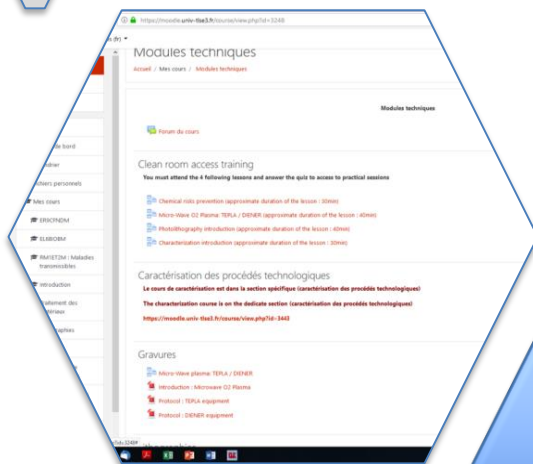
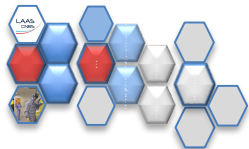
Training organization :

Monthly

Meeting 1h30

Visit of the platform 30min

2- e-learning session



2
On
session
(Moodle)

Training organization :

4 mandatory modules
30-40min per module
Qualification

Process basics :

Knowledge on the 4 technics

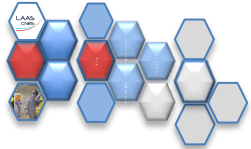
Chemistry, O₂ Plasma, UV lithography and characterization

Safety (chemical risk)

Understand the operations

Rules with the resources

3- Practical trainings



3
Practical
trainings

Mandatory :

5 Modules (2 sessions/month)

Chemical safety, Chemistry, O2 Plasma, UV lithography and characterization

From 1/2 to 3h per module

- Face to face contact with responsible
- Real condition on 1 or 2 tools, handling
- Insist on main information about the technology

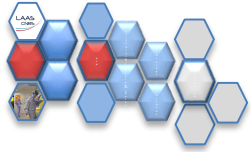
On demand training:

>90% tools in the clean room (e-beam, SEM/AFM, packaging,...)

Goal:

- User autonomy
- Time saving for all

4- TEAM Courses



4
TEAM
Courses



Mandatory lectures :

8 Modules (2h)

overview of different technologies, design rules, resist chemistry,...

- Improve the understanding of each technic
- Insist on main informations and problems

On demand lectures:

> 14 technics of cleanroom (2h)

Goal:

- Improve the understanding of technic
- Window about other knowledge

Advantages of hybrid learning

online:

For student:

- Continuous access
- Self paced learning

For permanent staff:

- Less repetitive/time consuming
- Student understand technic before manipulate

Our duty:

- Law about dangerous matter => examination

System online:

- monitoring

Face to face:

For student:

- Applicative question
- Manipulations

For permanent staff:

- Applicative answers
- More interactive

Our duty:

- Verify student understand the different risks (danger, contamination,...)

Up to date knowledge

But still under construction...

Before 2012:

Annual courses

Practical training on demand

since 2012:

Upgrade our training "offer"

Standardization (intranet, booklet and training process)

Stay "scholar"

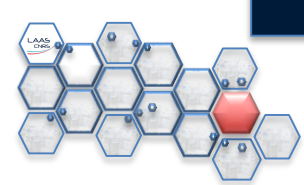
since 2018:

Work with new tool (e-learning)

Work with master student on new teaching approach (2019)



Conclusions



User

>180
Variety/needs
turnover



Training

New method at our lab
Hybrid training
Online access



Advantages

Student more involve
Better solicitation for staff
Law agreement

Open questions?

What kind of training organization (time, people,...) do you have?

Do you already work with specialist in teaching method?

Thank you for your attention

Contact us: formationteam@laas.fr

This work is supported by Renatech network : <https://www.renatech.org/en/>