PROJECT

Project - 4PMTGPR2 (3 ECTS)

Study plan

30 January - 23 May 2020

PoliTO	**Bloc 1**		**12**	**84**	**6**	**30**		**120**	
	Physics of Technological Processes	Matteo Cocuzza	6	60					
	Design of Microsystems	Danilo Demarchi	6	24	6	30			
	Bloc 2		**12**	**96**		**24**		**120**	
	Solid state physics	Giancarlo Cicero	6	51		9			
	Electronic devices	Federica Cappelluti	6	45		15			
	Bloc 3		**10**	**84**		**16**		**100**	
	Materials and Characterizations for micro and Nanotechnologies	Fabrizio Giorgis	10	84		16			
	Total:		**34**	**264**	**6**	**70**		**340**	
Phelma	**Bloc1** UE Microtechnologies (mandatory)		**6**	**44**	**14**			**58**	
	Microsystèmes II	Matteo Cocuzza	2	20					written 1h
	Circuits optiques planaires	Jean-Emmanuel Broquin	2	14	4				written 2h
	Optoelectronique	Jean-Emmanuel Broquin	2	10	10				written 2h
	Bloc 2 UE Microélectronique (mandatory)		**6**	**12**	**16**	**32**		**60**	
	Conception de circuits analogiques I	Davide Bucci	2	12	8				written 2h
	Travaux pratiques : Micro et Nanosystèmes	various instructors	4		8	32			written 2h
	Bloc 3 UE Nanophysique et Nanostructures (mandatory)		**6**	**40**	**24**			**64**	
	Physique des nanostructures et transport électronique	Thierry Ouisee	2,5	22	6				written 3h
	Nanostructures pour les applications optiques et magnétiques	Prejbeanu/Montes	2	10	10				written 2h
	Dispositifs de CMOS Avancés	Quentin Rafhay	1,5	8	8				written 2h
	Bloc 4 UE Cours de spécialisation (mandatory)		**6**	**38**	**14**			**52**	
	Physique et applications de la microscopie avancée	Sellier/ Winckemann	2	16	4				written 2h
	Lithographie avancée	Bertrand Le Gratiet	2	6	6				written 2h
	Conception de circuits numériques	Lorena Anghel	2	16	4				written 2h
	Bloc 5 UE SHS/SME (mandatory)		**6**	**20**	**26**		**20**	**66**	
	Strategy & Finance (in English)	Alexandre Etuy	2	10	10				report
	Projet de groupe Lean R &D	various instructors Pierre Chevrier	3	10	7		20		report presentations MCE
	Projet d'insertion professionnelle	Laurence Pierret	1		16				round table
	UE REX (mandatory only Phelma students)		1		4				
			1		4				round table
	Total:		**31**	**154**	**98**	**32**	**20**	**300**	

"Engineering track"

“Engineering track”

- **Strategy & Finance** (20h, Alexandre Etuy)
- **Communication at work** (16h, Laurence Perret)
- **PROJECT**

  Lean Research & Development (5 sessions)

  Technical Project (3 sessions + unsupervised work)

Lean Research & Development

Pierre Chevrier
pierre.chevrier@grenoble-inp.fr

- The objective of this module is to help students in the project. By focusing on the management aspect of this project, we want to help them implement a real strategy to complete their project and maximize their chances of success.
- As the number of start-ups continues to grow, and technological advances are faster and faster, it becomes crucial for any engineer to understand the set of processes that allow the creation, the development and the marketing of a product or service, from a technical point of view but also from a managerial point of view.
- The diffusion of new management tools resulting from Activity Based Methods or the use of Design To Cost methods in the industry since the beginning of the 2000s show that this course can be interesting for a young engineer wishing to start a business but also for a graduate wishing to integrate quickly design project teams.

Lean Research & Development

Pierre Chevrier
pierre.chevrier@grenoble-inp.fr

First Lecture – 3 hours
- Introduction
- Project Management: Project preparation
- Study case: solar plant project

Second Lecture – 3 hours
- Project Management: Project execution
- Study case: solar plant project
- Project Management: New Product development Process

Third Lecture – 4 hours
- Efficiency in R&D organizations
- Lean Introduction
- Value Stream Mapping study case + VSM inputs
- 13 principles of Lean Development

Fourth Lecture – 4 hours
- Serious Game: 1st round Silo Story
- Theoretical input :
  - Multitasking & Time-management
  - Fast-Feed-Back & Best-Practices
- Serious Game: 2nd round Silo Story
- Debriefing

Fifth Lecture – 3 hours
Serious Game: 1st round Valu Story
- Debriefing – Keep – Drop – Start
- Flash back on Lean Development and Project Management essentials
- Serious Game: 2nd round Valu Story
- Debriefing

Individual exam 1 hour: Multiple Choice Questionnaire

Team of technical experts

Maryline BAWEDIN

Davide BUCCI

Pascal MAILLEY

Nicolas CASTAGNE

Liliana PREJBEANU

Florence MARCHI

Laurent MONTES

Marianne WEIDENHAUPT

microelectronics devices, TCAD simulations analog electronics, photonics, measuring systems, photovoltaic, technology, Silvaco simulations, optical application, simulation, MEMS, technology, multiphysical modelling, magnetic devices, spintronics, bioelectronics, biotechnology, microscopy, Programming, C/C++,…

Project objectives

- ✓ Promote team work
- ✓ Initiation to project management
- ✓ Closing the gap between theory and practice

Approach selected:

– 8 students / team

- Phase I State of Art → 2 March
- Phase II Product Specification → 9 April
- Phase III Product Development → 18 May

Free slots to work for the Project unsupervised work

			G1		G2		G3		G4		G5		G6		G7		G8		G9		G10	
Wed	05/02/20	AM	N1	SLD							S1	AK	S1	AK	S1	AK	S1	AK				
Wed	05/02/20	PM	S1	AK	S1	AK	S1	AK	S1	AK	N1	CW										
Thurs	06/02/20	PM	S2	AK	S2	AK	S2	AK	S2	AK	N2	TO										
Wed	12/02/20	AM	T1	DB	T1	JEB	N1	CW			S2	AK	S2	AK	S2	AK	S2	AK				
Wed	12/02/20	PM	T2	DB	T2	JEB	N2	TO	Communication at work													
Thurs	13/02/20	PM	N2	SLD					Communication at work													
Wed	19/02/20	AM	T3	DB	T3	JEB			Communication at work										Project			
Wed	19/02/20	PM	T4	DB	T4	JEB	Project															
Wed	04/03/20	AM	C1	MB	C2	MB	T1	JEB	T1	LM					N2	SLD			S1	AK	S1	AK
Wed	04/03/20	PM	C2	MB	C1	MB	T2	JEB	T2	LM					N1	FM			S2	AK	S2	AK
Thurs	05/03/20	PM			N1	FM																
Wed	11/03/20	AM	Communication at work								T1	MB	T1	JEB			N1	SLD	Communication at w			
Wed	11/03/20	PM	Project								T2	MB	T2	JEB			N2	JC	Project			
Wed	18/03/20	AM	Project				T3	AK	T3	LM	Project								N1	CW	Project	
Wed	18/03/20	PM			N2	TO	T4	AK	T4	LM	Project											
Thurs	19/03/20	PM	Communication at work						N1	FM	Project								ommunication at wo			
Wed	25/03/20	AM					C1	TK	C2	TK	T3	AK	T3	DB	Project				N2	JC	Project	
Wed	25/03/20	PM	Project				C2	TK	C1	TK	T4	AK	T4	DB	Project							
Wed	01/04/20	AM	Project						Communication at work										T1	AK	T1	JEB
Wed	01/04/20	PM	Project						N2	SLD	Project								T2	AK	T2	JEB
Wed	08/04/20	AM	Project								C1	TK	C2	TK	Project				T3	MB	T3	JEB
Wed	08/04/20	PM	Project								C2	TK	C1	TK	Project				T4	MB	T4	JEB
Wed	29/04/20	AM	Project										N1	CW	T1	AK	T1	JEB	C1	TK	C2	TK
Wed	29/04/20	PM	Project										N2	JC	T2	AK	T2	JEB	C2	TK	C1	TK
Wed	06/05/20	AM	Communication at work						Project						T3	MB	T3	JEB	ommunication at wo			
Wed	06/05/20	PM							Projet						T4	MB	T4	JEB			N2	JC
Thurs	07/05/20	AM							Communication at work													
Thurs	07/05/20	PM	Communication at work												C1	TK	C2	TK	ommunication at wo			
Wed	13/05/20	AM													C2	TK	C1	TK			N1	CW
Wed	13/05/20	PM	Communication at work																ommunication at wo			

MaJ **27/01/2020**

Prenom	Nom	Code
Simon	Le Denmat	SLD
Marylin	Bawedin	MB
Davide	Bucci	DB
Clemens	Winkelmann	CW
Anne	Kaminski	AK
Laurent	Montes	LM
JE	Broquin	JEB
Johann	Coraux	JC
Florence	Marchi	FM
Thierry	Ouisse	TO
Theano	Karatsori	TK

Organization

Phase I: State of Art

Tasks: listing of the existing solutions, physical principles, laboratories/companies
March 2nd afternoon
10 min talk + 20 min discussion (designation of 2 tutors)

Phase II: Product Specification

Tasks: Market analysis + product specifications + define building blocks of the product architecture + schedule (Gantt diagram)
April 9th afternoon
10 min talk + 20 min discussion
Written hand-out (10 pages maximum)
due on April 7th 12:00

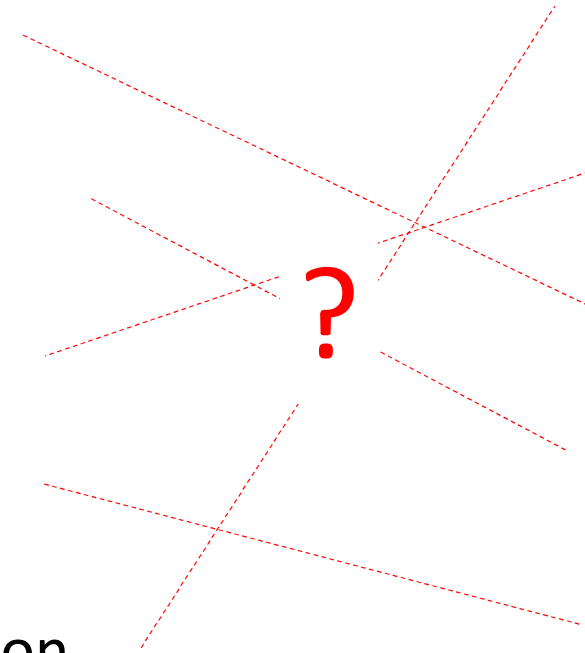
Phase III: Final Product Development

Final presentation : May 18th
25 min talk + 30 min discussion
End-of-project report (20 pages maximum)
due on May 14th, 12:00

Discuss & converge: Monday 3rd February after my class of NOMA
give me a bijective association Team –Topic number

Topics

1. Energy harvesting
2. Smart objects
3. Sustainable MEMS
4. NanoEnactive
5. BioMEMS application



Teams

Team 1 : G1 + G2

Team 2 : G3 + G4

Team 3 : G5 + G6

Team 4 : G7 + G8

Team 5 : G9 + G10

Assessment

80% Technical project

- documents (written hand-out, final report)
- presentation, discussion, attitude, implication

20 % Multiple Choice Questionnaire (Lean Research & Development)

IDEX UGA
Excellence Initiative label

NanoEnactive

Novint Falcon Haptic System
« Virtual reality »

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liliana.prejbeanu@phelma.grenoble-inp.fr
nicolas.castagne@grenoble-inp.fr

2019 Projects

Lorentz's Force based Magnetic Field Sensor
for Drone Compass

A FLEXIBLE LAB-ON-SKIN
FOR SWEAT ANALYSIS
END OF PROJECT REPORT

Li-Fi photodiode for indoor application

LiDAR systems for development of autonomous air delivery network

SPORTSWEAR FOR ENERGY HARVESTING

e-Shirt

2018 Projects

ELECTRONIC NOSE AirWatch

Si-QD based LSC: a new Solar Window

Piezoelectric Energy Harvesting for Leadless Pacemaker

Study On The Feasibility Of A Low Cost Water Assessment Device For In-Situ Prevention Based on Organic Field Effect Transistor

The MilkCheck®

MILKCHECK

Bovine mastitis detection with magnetic beads

Shennong
A Portable Device for the Detection of Allergens in Food

2017 Projects

ELECTRONIC EYE

A view inside the engineering sight

Extending the lifetime of marine life monitoring tags

SEA-NERGY

Think smaller, go deeper

Wearable magnetic field sensor for MRI operators

Sensei

How can neuronal sensing be improved using MOS-like devices?

CogiTech

JUST THINK !!!

LONG - TERM ELECTROCARDIOGRAPHIC MONITORING