

# Nanoscience: A historical perspective

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*Lecture Notes*  
*Fall 2007*



## Nanoscience: A historical perspective

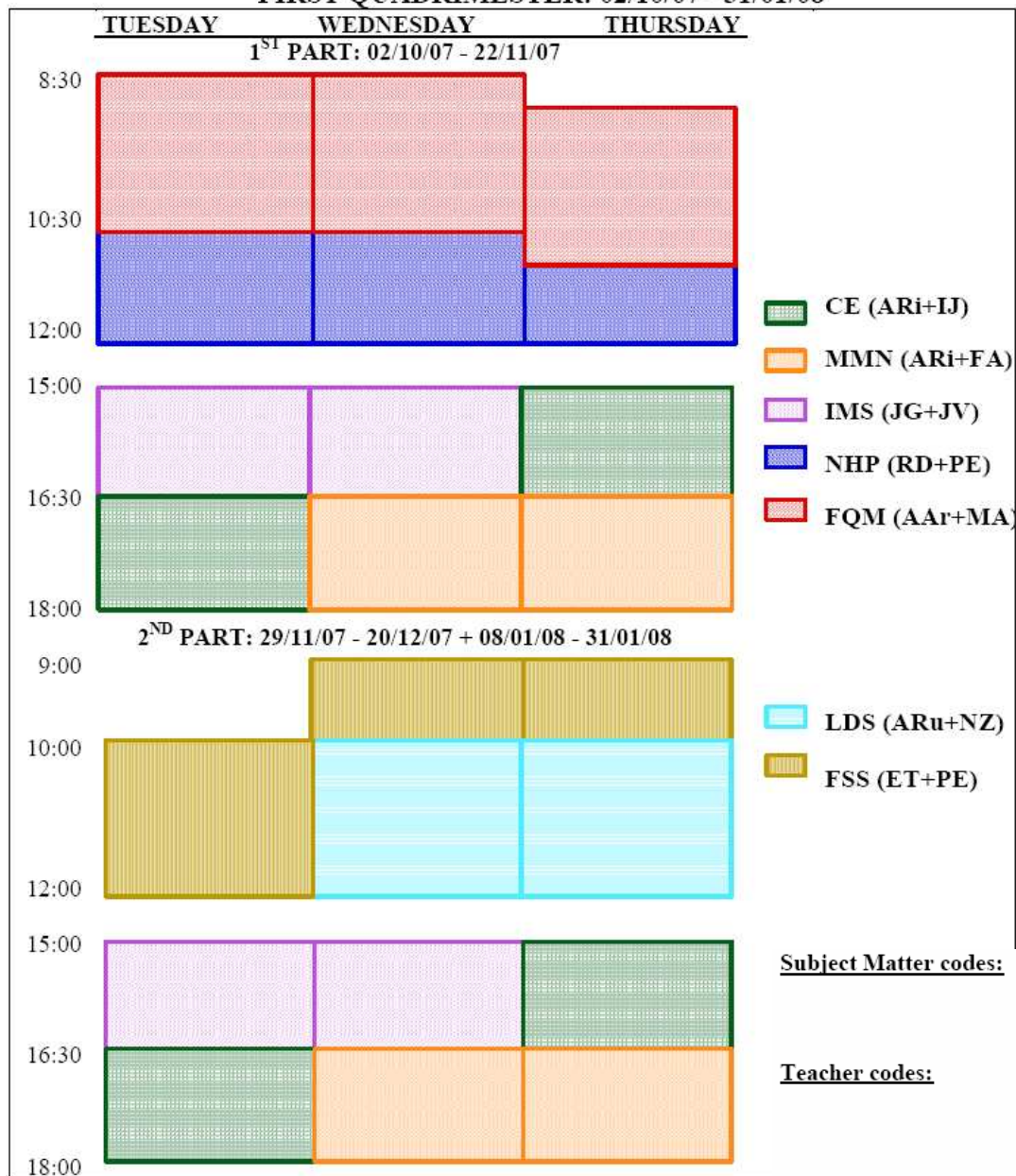
Main goals:

- Knowledge: provide a historical perspective on Nanoscience
- Knowledge: provide scientific and social contexts for Nanoscience
- Motivation: show why research in (Nano)science is exciting



# MASTER IN NANOSCIENCE CALENDAR

FIRST QUADRIMESTER: 02/10/07 - 31/01/08



## DIPC

- Tuesday 10.30am
- Wednesday 10.30am
- Thursday 11.00am

# OCTOBER 2007

<i>monday</i>	<i>10.30-12.00</i> <i>tuesday</i>	<i>10.30-12.00</i> <i>wednesday</i>	<i>11.00-12.00</i> <i>thursday</i>	<i>friday</i>	<i>saturday</i>	<i>sunday</i>
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4
5	6	7	8	9	10	11

 *no lecture*

# NOVEMBER 2007

<i>monday</i>	<i>10.30-12.00</i> <i>tuesday</i>	<i>10.30-12.00</i> <i>wednesday</i>	<i>11.00-12.00</i> <i>thursday</i>	<i>friday</i>	<i>saturday</i>	<i>sunday</i>
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	1	2
3	4	5	6	7	8	9

 *no lecture*



## Lectures (as they appear in www.mscnano.eu)

Tema 1	WHY THE NANOSCALE IS INTERESTING: SMALL IS DIFFERENT!
Tema 2	FEYNMAN'S HISTORICAL TALK.
Tema 3	THE MBE TECHNIQUE AND THE DEVELOPMENT OF SURFACE SCIENCE.
Tema 4	THE DISCOVERY OF THE TRANSISTOR AND MINIATURIZATION IN ELECTRONICS
Tema 5	THE DISCOVERY OF STM, AFM AND SPM MICROSCOPIES
Tema 6	THE DISCOVERY OF CARBON NANOSTRUCTURES, NANOMATERIALS AND NANODEVICES
Tema 7	NANOTECHNOLOGY'S IMPACT IN SOCIETY AND ECONOMY



## OCTOBER 2007

<i>tuesday</i>	<i>wednesday</i>	<i>thursday</i>
2	3	4
9	10	11
16	17	18
23	24	25
30	31	1

1st week (RDM):

- What is nanoscience?
- What is nanotechnology
- Impact of nanotechnology in society

2nd week (PME):

- What are things made of?
- From classical to modern science
- Reductionism
- Small is different

3rd week (RDM):

- Molecular Beam Epitaxy (MBE)
- Development of Surface Science

4th week (PME):

- Feynman's talk
- DNA
- Manipulation of atoms: STM and AFM microscopies

5th week (PME):

- Invention of transistor
- Miniaturization in electronics

## NOVEMBER 2007

<i>tuesday</i>	<i>wednesday</i>	<i>thursday</i>
30	31	1
6	7	8
13	14	15
20	21	22
27	28	29

6th week (RDM):

- Nanostructures of Carbon
- Quantum Dots
- Other nanomaterials

7th and 8th weeks:

Student-led seminars on special topics



## 7th and 8th weeks: Student-led seminars on special topics

- Nanotoxicity: Potential Health Hazards
- Nanomedicine and Novel Methods of Diagnosis
- Nanomedicine and New Therapeutical Methods
- Nanoscience Research and Energy Needs
- Nanophotonics
- Nanocatalysis
- Nanotechnology and the Semiconductor Industry
- Nanofabrication: Bottom-up and Top-down approaches
- Theory and Modelling in the Nanoscale
- Bio in Nano and Nano in Bio
- Ethical Challenges in Nanoscience Research
- ...



## 7th and 8th weeks: Student-led seminars on special topics

Seminars should aim to:

- be technically correct
- be understood by the audience
- be as interactive as possible
- be prepared with appropriate support material  
(short paper, 10-12 pages of text + graphics)

You may conduct joint projects, although individual efforts are recommended.

Both the presentation and the paper will be assessed.

Marks will be based on paper+seminar assessments.



<http://dipc.ehu.es/ricardo/master/nanohistory.htm>

