Suggested Electronics Curriculum

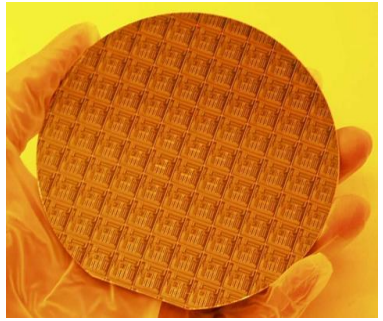
Curriculum C: Electronic path

Type of Educational Activity / Area	ECTS ambito	Codes	Courses	ECTS	SSD	Semester
Core – Experimental and Applied	16	F1703Q014	(*) LABORATORIO DI ELETTRONICA I	10	FIS/01	I
		F1703Q015	(*) LABORATORIO DI ELETTRONICA II	6	FIS/01	II
Core - Theoretical and Foundations of Physics	6	F1703Q056	THEORY OF CONDENSED MATTER	6	FIS/02	I
Core - Microphysics of Matter and Fundamental Interactions	18	F1703Q035	PHYSICS OF SEMICONDUCTORS	6	FIS/03	II
		F1703Q049	SOLID STATE PHYSICS	6	FIS/03	I
		One course to be chosen from:				
		F1703Q004	APPLIED QUANTUM TECHNOLOGIES	6	FIS/04	I
		F1703Q007	ENERGY PHYSICS	6	FIS/03	II
		F1703Q031	OPTICAL SPECTROSCOPY OF SOLIDS	6	FIS/03	II
		F1703Q036	PLASMA PHYSICS I	6	FIS/03	I
		F1703Q037	PLASMA PHYSICS II	6	FIS/03	II
Related / Supplementary Educational Activities	18	F1703Q003	APPLIED ELECTRONICS	6	ING-INF/01	I
		F1703Q012	(*) INFORMATICA INDUSTRIALE	6	ING-INF/05	II
		F1703Q028	MONTE CARLO SIMULATION OF RADIATION DETECTORS	6	FIS/04	II
Elective course (chosen by the student)	12	**Choose 12 ECTS including:**				
		FSM01Q029	**PHYSICS AND TECHNOLOGY OF ELECTRONIC DEVICES WITH LABORATORY	6	ING-IND/22	I

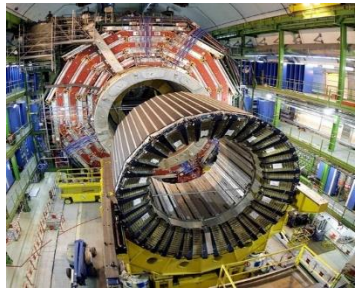
Courses marked with (*) *are taught in Italian.*
** Course offered within the Master's Degree Programme in Materials Science and Nanotechnology.

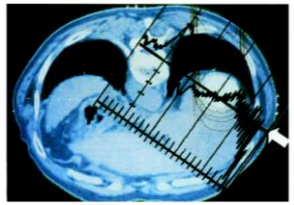
Covers:

- **Analog and digital circuit design and simulation**
- **Integrated circuits design and CAD tools**
- **Physics of semiconductor and electronic devices properties**

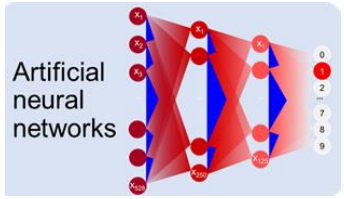


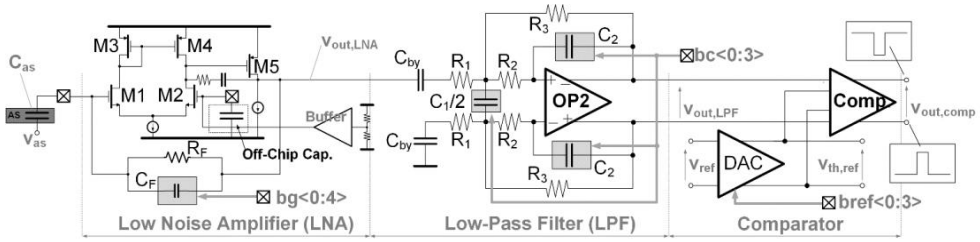
Electronics Lines of research and thesis topics

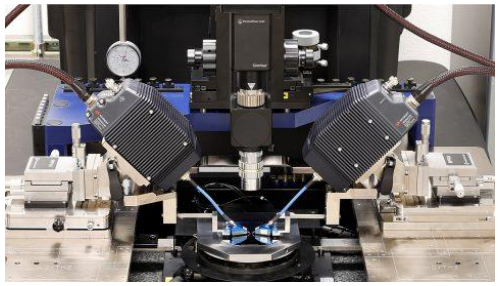




Treatment plan (hepatic cancer patient)







- **Electronics for physics applications**:
  - Electronics for High Energy Experiments
  - Biomedical (Hadron therapy, Brain interfaces, neuromorphic circuits)
  - Nanoelectronics (down to 7nm FinFET) and open-source 130 nm processes
  - *Thesis topics:* Design and characterization of analog and digital electronics from 130nm open-source down to 7nm FinFET

- **RF electronics for telecom and quantum computing**:
  - Characterization and modelling of single transistors (CMOS, FinFET, HEMT) in standard and cryogenic environments
  - *Thesis topics: Characterization, modelling and numerical simulations of RF devices*

- **Industry**:
  - Automotive / Electric Car (Power management)
  - Sensor interfaces for mobile phone
  - Aerospace
  - *Industrial thesis in Microelectronics lab or in companies*