

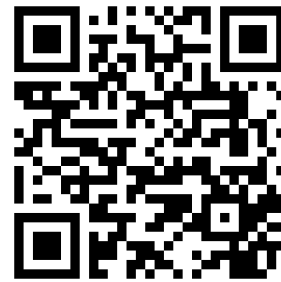
Location and Contacts

DEEC- Departamento de Engenharia Eletrotécnica e de Computadores
Electricity Pavilion

Instituto Superior Técnico

Av. Rovisco Pais 1
1049-001 Lisboa
Portugal

<http://museufaraday.tecnico.ulisboa.pt>
faradaymuseum.tecnico.ulisboa.pt



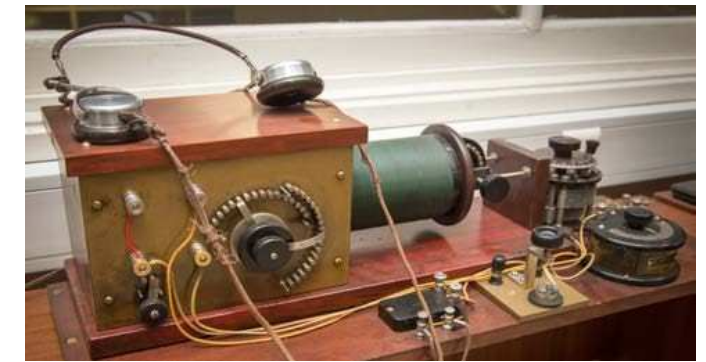
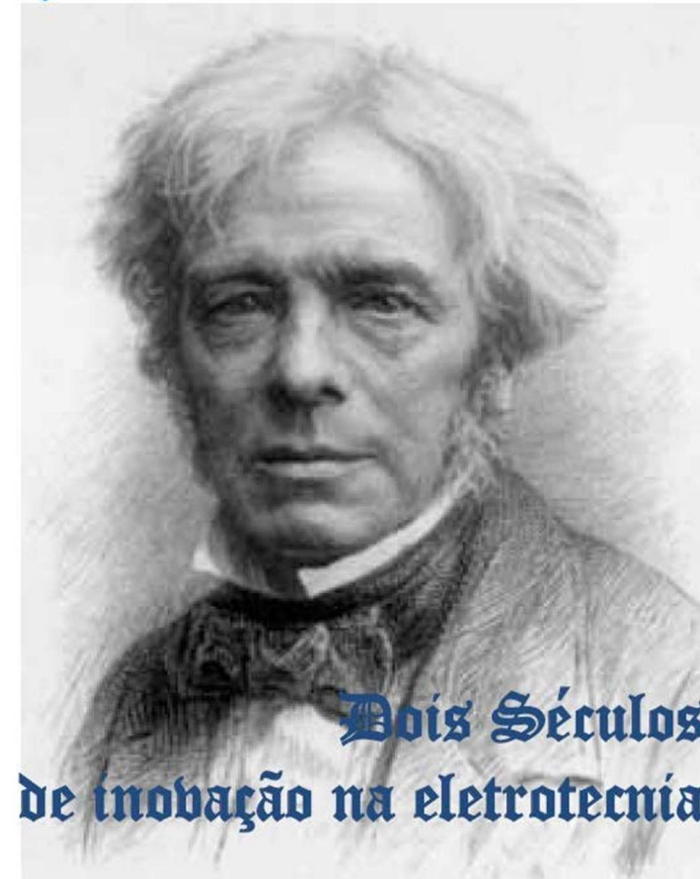
Contacts:

Museum
Tel: +351218419342

servicoeducativomuseus@tecnico.ulisboa.pt



Museu Faraday



Hundreds of pieces from the 19th century to the 21st century

The Faraday Museum has more than 600 historical pieces identified, cataloged, refurbished and photographed. These items cover the areas of electrotechnical engineering, conventional and electronic instrumentation, cable and radio communication apparatus, audio, video, radio and TV sets.

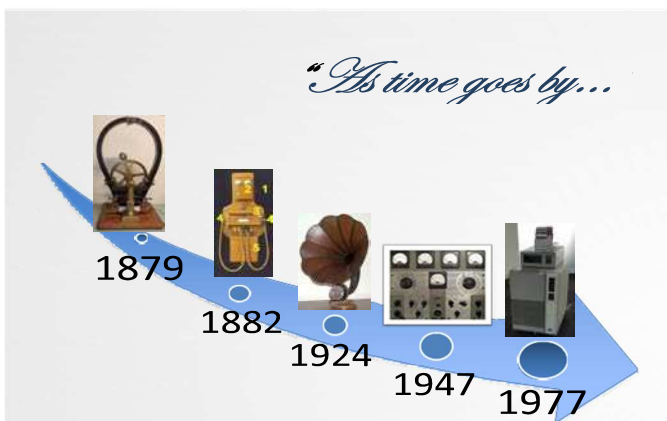
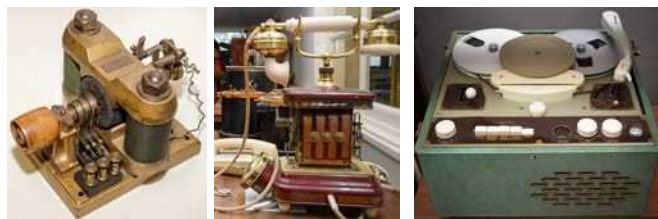
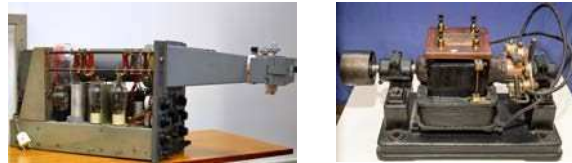
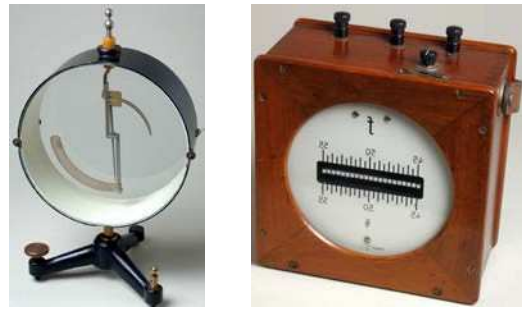
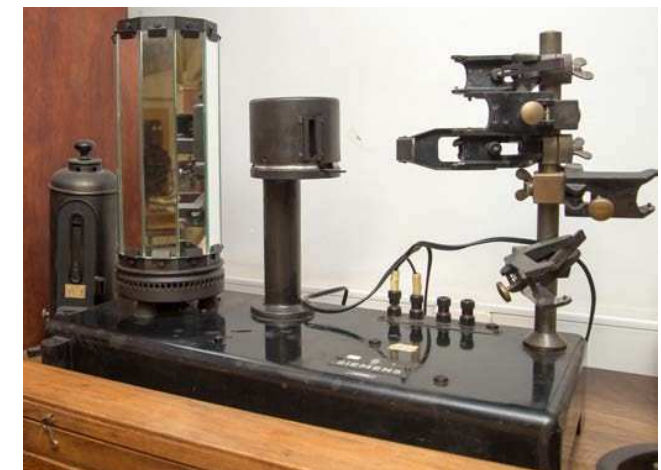
In the Faraday Museum you can find:

- Regenerative, tuned frequency and super-heterodyne radios of the 1910s,
- Miniaturisation made possible by the appearance of the transistor in 1948,
- Electronic calculators and computers of the 1970s, resulting from the emergence of integrated circuits with microprocessors.

The Faraday Museum brings together several hundred pieces collected from IST laboratories, Research Laboratories associated with IST and donations from companies and private collections, generously lent to IST.

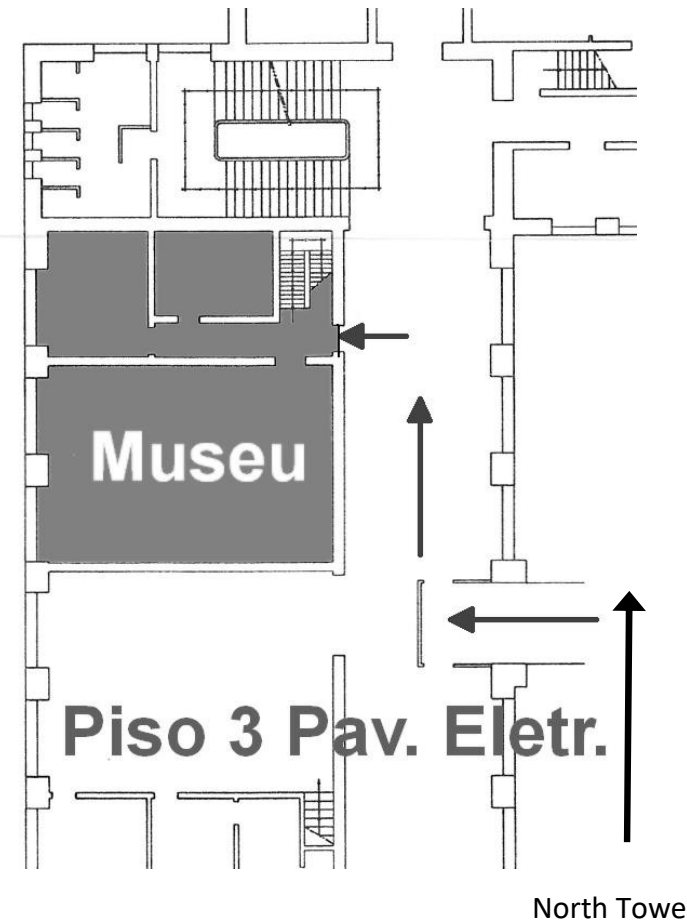
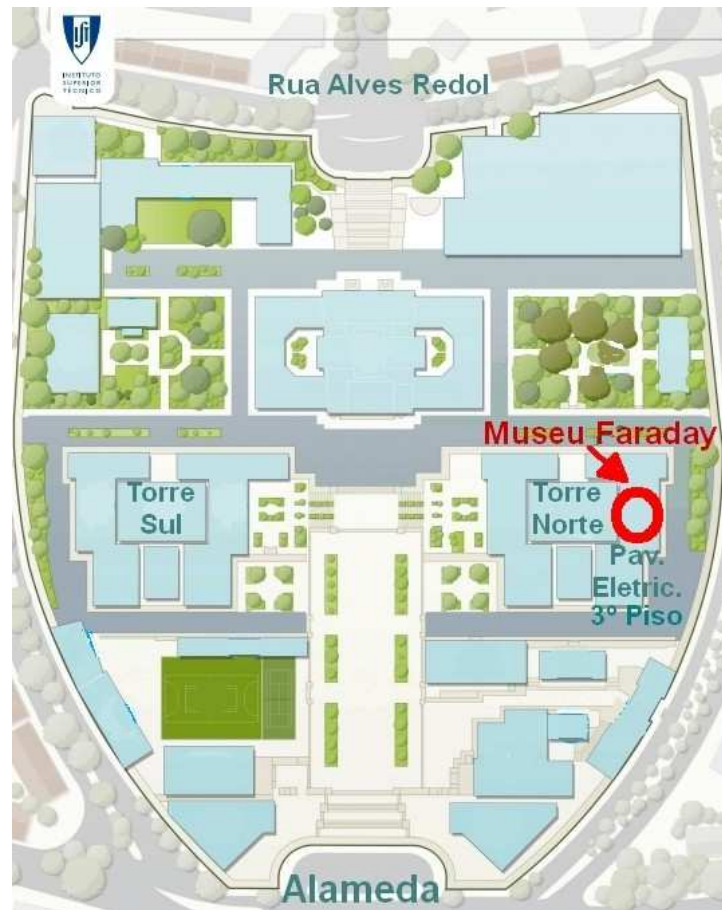
Michael Faraday

Michael Faraday was an English scientist who made fundamental contributions to the development of electronic and electrotechnical engineering, physics, chemistry and optics. Many of the older equipment in the museum represents the direct application of concepts developed by Faraday. The discovery of the law of electromagnetic induction allowed him to create the first electric dynamo. Faraday demonstrated the concept of "fields", which became the basis of all the subsequent theories. He demonstrated the relationship between magnetic and electric fields and, later, revealed the interaction between a magnetic field and light. The understanding of these interconnections was key for the mathematical formulation of the integral equations of the electromagnetic field, in 1860, by the English mathematician James Maxwell. This constitutes the basis of classical electromagnetism and, therefore, of classical optics. The German engineer Heinrich Hertz experimentally verified the existence of electromagnetic waves and the possibility of concentrating them through antennas. The path to radio communication that was developed at the beginning of the 20th century was thus opened, establishing the current basis for the development of new technologies.



Michael Faraday (1791-1867)

- 1791: Faraday is born in a suburb in Surrey.
- 1804: With limited academic training, he is hired as an apprentice binder. Self-taught, Faraday enjoys reading during his free time, with a particular interest in chemistry.
- 1813: Faraday becomes chemist Sir Humphry Davy's assistant and a laboratory assistant in the Royal Institution of Great Britain (RI), a position he holds until 1826. He accompanies Sir Humphry Davy on trips to France, Italy and Switzerland where he meets Volta, Ampère and Gay-Lussac.
- 1821: Faraday invents the homopolar electric motor.
- 1825: Faraday is appointed Director of the RI Laboratory. He discovers benzene, which was one of the components used in the London's gas lighting.
- 1827: First of 19 series of Faraday's Christmas Lectures at the RI. Since 2010, the lectures are broadcast on BBC Four.
- 1831: Faraday discovers the law of electromagnetic induction, invents the electromagnetic generator and the transformer.
- 1832: Faraday describes the laws of electrolysis and founded electrochemistry.
- 1833: Faraday is appointed Professor of Chemistry at the RI.
- 1836: Invention of the Faraday Cage.
- 1845: Faraday discovers the effect of interaction between magnetic field and light (so-called Faraday rotation). He classifies magnetic materials and introduces diamagnetism.
- 1857: Faraday turns down a knighthood and the post of Head of the Royal Society.
- 1860: Faraday's famous *Chemical History of a Candle* lectures are published.



Pedagogical Experiments

The Faraday Museum has a set of pedagogical experiments for secondary school students on electromagnetic phenomena, basic principles of electronics and its applications. These experiments include:

- Faraday inventions
- Magnetism
- Thermoelectricity
- Electron motion in vacuum tubes, etc.



Collections and Key Pieces

Collections

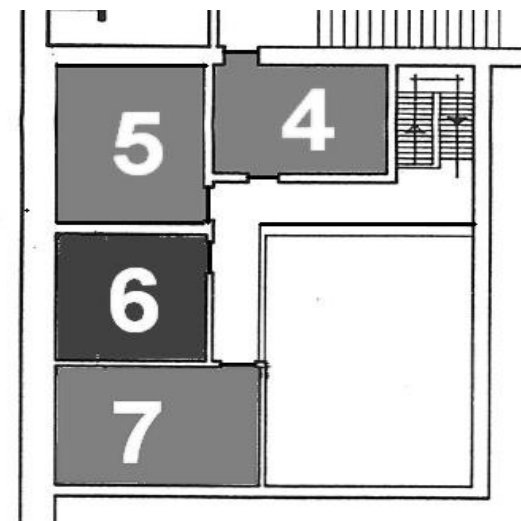
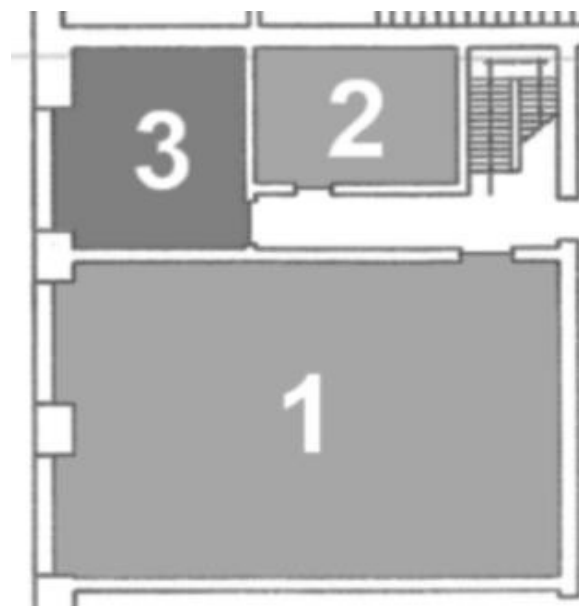
- Instruments of the 20th century
- Energy counters
- Computers and calculators
- Vintage Radios
- Systems currently developed in IST

Pieces

- Grenet cell (1882)
- Aron energy counter(1884)
- Breadboard radio receiver(1924)
- Magnetic wire recorder (1942)
- First radio with transistors (1954)
- First TV set with transistors (1959)
- Giant slide rule (1963)
- Ferrite memory made in Portugal (1966)
- First IC designed in Portugal (1982)
- First CD player (1982)
- First TV digital receiver (1983)
- First TV receiver with LCD screen (1984)



Organization



- The Faraday Museum is spread across seven rooms and covers three thematic areas:
 - Instrumentation (1)
 - Writing and Computing (5,6)
 - Audio, Radio, TV and Communications (7)

Two rooms (2, 3) concern pedagogical experiments and one room (4) is prepared for presenting recent work exhibitions. In the main room (1) there is a space for temporary exhibitions.

Most of the equipment shown on FM has been refurbished so as to insure its functionality.

Contributions

The Museum Archive contains pieces collected from IST, from Research Institutes, from private collections and well as donations from private companies. All objects are registered and their ownership is clearly displayed.

The Faraday Museum accepts donations in the form of items, material and more.

Visits

Visits to the Faraday Museum should be booked by telephone (+351-218419342) or email servicoeducativomuseus@tecnico.ulisboa.pt

