



# Bilbo Summer Maths 2016

20.Jun - 01.Jul 2016

Cod. 361-16

**Mod.:**

Face-to-face

**Edition**

2016

**Activity type**

Summer course

**Date**

20.Jun - 01.Jul 2016

**Location**

Faculty of Engineering in Bilbao

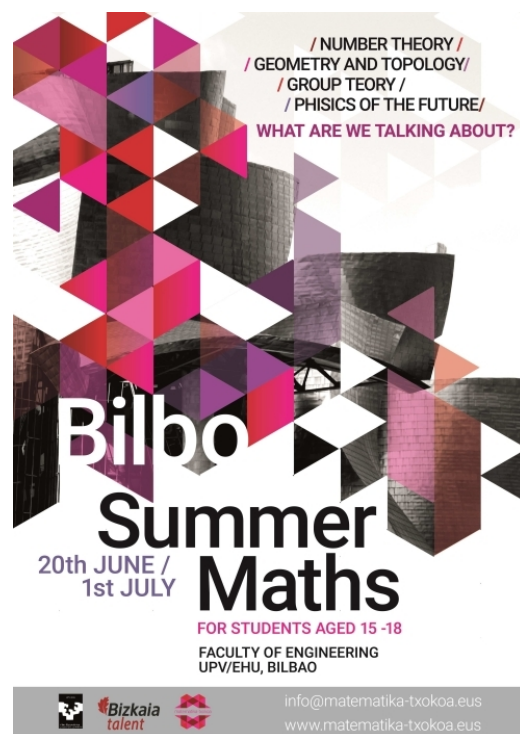
**Languages**

English

**Organising Committee**



Fundación  
BBVA



## Description

Registration: <http://matematika-txokoa.eus/en/summercourses/>

This course organised by *Matematika-txokoa* is for students aged 15-18 with the aim to promote science via the mathematics in them.

It is aimed at students interested in science in general; not only in mathematics but also in physics, biology, chemistry, engineering... You will all be able to enjoy discovering new concepts. If you weren't aware that mathematics is hiding in every science, this is a great opportunity to discover these connections and to learn about plenty of interesting applications: encryption, molecular biology, electrical engineering, nanotechnology...

It will last 10 days, 4 hours per day in a seminar/workshop format as well as exploring with some experiments.

## Course specific contributors



ENERGIA-OLATUAK / OLAS DE ENERGÍA  
DONOSTIA / SAN SEBASTIÁN 2016  
DSS2016.EU



# Program

## 20-06-2016

09:00 - 13:45 Mathematical writing and reasoning.

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## 21-06-2016

09:00 - 13:45 Complex numbers in electrical engineering, electromagnetism and fluid dynamics.

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## 22-06-2016

09:00 - 13:45 Group theory: concept of a group, properties and examples. Permutations and computations. Dihedral and symmetric groups.

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## 23-06-2016

09:00 - 13:45 Group theory: permutations in Rubik's cube and molecular symmetries to foresee properties of molecules.

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## 24-06-2016

09:00 - 13:45 Number theory: modular arithmetic, cyclic groups and diophantine equations.

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## 27-06-2016

09:00 - 13:45 Number theory: Fermat's little theorem, Euler's theorem and Euler's last theorem-Andrew Wiles. RSA encryption method. Is purchasing online safe?

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## 28-06-2016

09:00 - 13:45 Topology: metric spaces, examples with different metrics, topological spaces and properties.

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**29-06-2016**

09:00 - 13:45

Topology: homeomorphisms-can you differentiate between a doughnut and a coffee cup? Topology is useful to understand the DNA structure!

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**30-06-2016**

09:00 - 13:45

Mathematical universe-from the atoms to the galaxies: physics basics ( forces, work, energy....) We're made of atoms! The Atomic Molecular Theory.

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**01-07-2016**

09:00 - 13:45

Mathematical universe-from the atoms to the galaxies: searching for quantum computers, what is a quantum? Into the nano-universe: physics basics at nano-scale. The universe in a nutshell: relativity nowadays, Einstein and GPS.

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**Directed by**



**Ainhoa Iniguez Goizueta**

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# **Place**

## **Faculty of Engineering in Bilbao**

Alameda Urquijo s/nº. 48013-Bilbao

Bizkaia