

# 1<sup>st</sup> GraWIToN school



GW Initial Training Network

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# GraWIToN objectives

**Train young scientists and engineers who will be able to understand and master the technological aspects of the current GWDs.**

**Train the future experts and scientific professionals for European industrial private sector and particularly for the R&D-based companies that are the suppliers of the high-tech components of vital importance for the future GWDs.**

**Provide the young researchers with the collaborative attitude and the organizational skills necessary for team-based research work.**

# Our Training Philosophy

- Our aim is to train young researchers in their field of research, but above all to give them the instruments to train their minds to think.
- The leitmotiv for these schools will be practical training sessions for all the topics they faced during frontal lessons.
- They will work in teams, make experiences with instruments and control software or simulation and programming. They will be journalists and Marie Curie ambassadors.

# Schools lectures contents

Fundamentals of Optics (OPT), High Power Laser (HPL), Data Analysis (DAS), optics Simulation (SIM)

Science communication, project management

Additional technical courses for digital signal processing, statistics or machine learning.

# Schools plan

## 1<sup>st</sup> Basic

- Hosting EGO, Cascina
- from 20/04/2015 to 08/05/2015

## 1<sup>st</sup> DAS

- Hosting GSSI, L'Aquila
- from 09/11/2015 to 13/11/2015

## 1<sup>st</sup> Tech

- Hosting UK/Birmingham
- from 25/01/2016 to 29/01/2016

## 2<sup>nd</sup> Tech

- On 2016 (TBD)

## 2<sup>nd</sup> DAS

- On 2016 (TBD)

## PM

- On 2017 (TBD)

# Compulsory schools FOR...

## Basic school

- All ESRs

## 1<sup>st</sup> Tech

- ESR1-10, first 3 days for ESR11-13

## 1<sup>st</sup> DAS

- All ESRs due to Mid-term review

## 2<sup>nd</sup> Tech

- ESR1-10, suggested for the others

## 2<sup>nd</sup> DAS

- ESR11-13, recommended for ESR5-7, suggested for others

## PM

- All ESRs

# 1<sup>st</sup> GraWIToN school

The first school has a strong **multidisciplinary** aspect.

We consider this first school a 'Basic' school since it will lead the student to the basic knowledge for working in GW community

It is a 'must' starting point to be then specialized in the following school

# 1<sup>st</sup> GraWIToN school lectures

The lectures are organized in sessions

- DAS: Data Analysis. General Relativity and Astrophysics. 1Day Multimessenger Workshop
- OPT: Optics. Optical theory and technology
- SIM: Simulation. Optical simulation
- HPL: High Power Laser
- OUT: Outreach. Science communication and science Events
- TSS: Technical Skill School: DSP and Statistics



# 1<sup>st</sup> GraWIToN school in number

21 h

Data Analysis (DAS)

21 h

Optics (OPT)

14 h

Simulation (SIM)

12 h

High Power Laser (HPL)

13 h

Outreach (OUT)

19 h

Complementary Technical Skill ( 5h Statistics 14 h DSP)

24 Teachers  
for 100 hours  
in Total !!

Please don't  
blame me

# Tools

## Moodle

- All of you have already account. We will collect there slides, videos, questionaries
- <https://moodle.grawiton-gw.eu/>

## Labs

- You will have practical experience during all the school

## Video/slides

- The lessons will be recorded and you can find them on moodle

## Exercises

- Some teachers may prepare exercise/quizes

# Recognized school

- The course on **Fundamentals of Gravitational Wave physics and detector technology is integrated** to the school and has been recognized for Ph.D course at Pisa University and Graduate school of Physics and Astronomy, Glasgow

- ***Course Format***

The Basic Course lasts for 84 hours, comprising the following lectures:

1. **Fundamentals of Astrophysics and General Relativity (21h):**

***Theachers: S. Capozziello, A. Possenti, M. Branchesi, E. Brocato, T. Font, N. Stergioulas***

2. **Fundamentals of Optics, High Power Laser and Simulation (42 h):**

***Theachers: C. Graef, C. Killow, S. Reid, A. Freise, I. Martin, D. Brown, S. Hild, J. Degallaix, B. Wilke, P. Wessels***

3. **Fundamentals of Statistics, Digital Signal Processing and Controls(21h):**

***Theachers: M. Pitkin, A. Gennai, D. Pasuello***

- An oral presentation at the end of the course is required.

# My warmest Welcome

- We can give Certificate of Attendance
- We will be with you during all the lessons. You can email to:  
[elena.cuoco@ego-gw.it](mailto:elena.cuoco@ego-gw.it) or [erika.morucci@ego-gw.it](mailto:erika.morucci@ego-gw.it)
- We will give further info during the school
- We will ask you to compile some questionnaires in order to learn/improve our work

**Welcome to everybody  
and enjoy the school!**