

# Programming for Data Science

Marco Beccuti

*Università degli Studi di Torino*

*Dipartimento di Informatica*



# Teacher

**Marco Beccuti**

Associate Professor in Computer Science

## **Office:**

Dipartimento di Informatica

Corso Svizzera 185

10149 Torino

## **E-mail:**

beccuti@di.unito.it

## **Home page:**

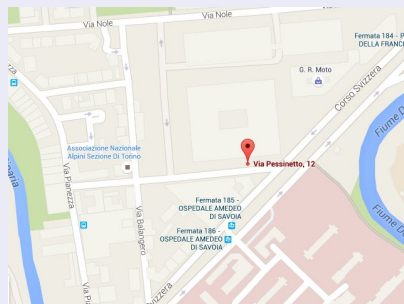
<http://www.di.unito.it/~beccuti>

My research is currently mainly focused on computational modeling and simulation of complex systems. In particular, I am interested in:

- Stochastic and hybrid modeling languages;
- Exact and approximated techniques to analysis the behavior of complex systems;
- Applications to computational Systems Biology.

Moreover, I work on the design of bioinformatics algorithms and workflows for the analysis of deep sequencing data (i.e. genomic, transcriptomic and single cell data) with particular emphasis on reproducibility aspect.

## How to reach Dipartimento di Informatica



# Course delivery

- The course consists of 24 hours of lectures and laboratories;
- Laboratory includes exclusively practical activities;
- The slides presented during lectures are available to students as on-line materials.
- Attendance to lessons is not mandatory, but highly recommended due to the necessity of learning and employing a specific computer science instruments.

# Course outline

- Introduction to Data science;
- Visualization using ggplot2;
- Data structures in R: vector, matrix, list and data frame, tibble;
- Apply in R;
- Data Transformation;
- Input and output in R;
- Function in R;
- Model in R;
- Debugging in Rstudio;
- Create a package in R.

# Course examination

- Exam will consist in a oral examination;
- Practice exercise using R could be required during the examination.

# Suggested readings for course

- Garrett Golemund and Hadley Wickham, **R for Data Science**, O'Reilly Media, Inc, USA, 2017.
- The R Manuals: An Introduction to R (<http://cran.r-project.org/doc/manuals/r-releases/Rintro.pdf>)
- The teaching material used for lessons and a series of practical exercises are available on the web site of the course (Moodle repository)