Coursework
II semester 2018-2019

PhD Course in Geosciences

SCHEDULE

Coursework
II semester 2018-2019

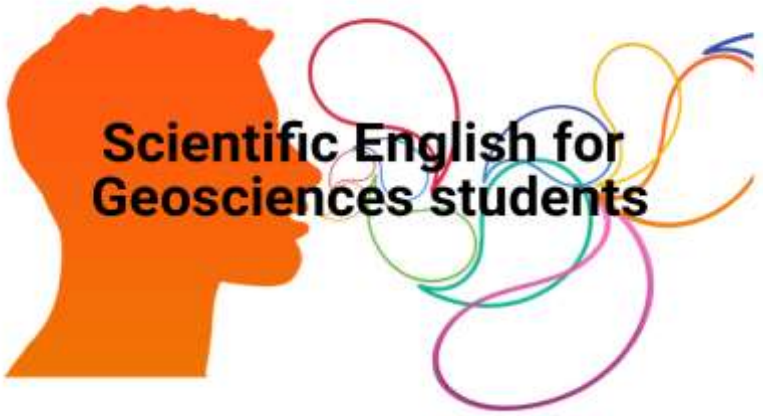
PhD Course in Geosciences

Monday	Tuesday	Wednesday	Thursday	Friday
APRIL 29	30	**MAY 1**	2	3
DI TORO 10.30-12.30; 1E	DI TORO 14.30-16.30; 1E			
Monday	Tuesday	Wednesday	Thursday	Friday
6	7	8	9	10
CASAS 14:30-16:30; 2O	CASAS 10:30-12:30; 2O	DI TORO 10.30-12.30; 2M	CASAS 14:30-16:30; 2L	CASAS 14:30-16:30; 2L
	DI TORO 14.30-16.30; 1E	CASAS 16.30-18.30; 1E (archeology)		
Monday	Tuesday	Wednesday	Thursday	Friday
13	14	15	16	17
DI TORO 10.30-12.30; 2I	DI TORO 14.30-16.30; 1E	BORG 11.30-13.00; 2H	BORG 11.30-13.00; 2H	
Monday	Tuesday	Wednesday	Thursday	Friday
20	21	22	23	24
		BORG 11.30-13.00; 2M	BORG 11.30-13.00; 2M	
Monday	Tuesday	Wednesday	Thursday	Friday
27	28	29	30	31
	BOSCHI 14.30-16.30; 2L	BORG 11.30-13.00; 2M	BORG 11.30-13.00; 2M	
Monday	Tuesday	Wednesday	Thursday	Friday
JUNE 3	4	5	6	7
		BORG 11.30-13.00; 2M	BORG11.30-13.00; 2M	
		BOSCHI 14.30-17.30; 2M	BOSCHI 14.30-17.30; 2M	
Monday	Tuesday	Wednesday	Thursday	Friday
10	11	12	13	14
		BORG 11.30-13.00; 2M		BORG 11.30-13.00; 2M
	BOSCHI 14.30-17.30; 2M	BOSCHI 14.30-17.30; 2H		
Monday	Tuesday	Wednesday	Thursday	Friday
17	18	19	20	21
NESTOLA 9.00-16.00; DEI - Aula Lepschy		BORG 11.30-13.00; 2I	CENNI 10.00-12.00; 1F	BORG 11.30-13.00; 1E
	BOSCHI 14.30-17.30; 2I	BOSCHI 14.30-17.30; 2I	CENNI 14.00-16.00; 1F	
Monday	Tuesday	Wednesday	Thursday	Friday
24	25	26	27	28
		CENNI 10.00-12.00; 1F	CENNI 10.00-12.00; 2M	
		CENNI 14.00-16.00; 1F	CENNI 14.00-16.00;2M	

Prof. Monica Borg (University of Birmingham)

Scientific English for Geosciences students

75% ATTENDANCE MINIMUM



Scientific English for Geosciences students

(Lecturer: Prof. Monica Borg)

Course Description

This course in Scientific English is specifically designed for PhD students who need to develop and consolidate their communicative skills in order to be able to present both in the oral and written forms their projects and research findings to academic audiences.
Although linguistic and grammatical proficiency will be targeted as we progress, the course will predominantly consist of practice-based activities such as: writing and delivering presentations; writing abstracts and presenting posters. The articles discussed and presented in class will deal with recent discoveries in the field in areas such as: air pollution, earthquake technology; environmental pollution; environmental bacteria; plant genes; mineral deposits; Climactic changes. Time will also be dedicated to identifying good practice such as the presentation skills of expert scientists. In line with the recent academic emphasis on knowledge transfer and research impact, students will be encouraged to reflect on ways in which presentations can be pitched to suit specialist as well as non-specialist audiences.

Course Objectives

By the end of this course students will be able to:
•Understand the principles of abstracts and presentations; •Read abstracts from scientific journals and present them in class
•Write abstracts of scientific articles and present them in class; •Plan and write research papers; •Prepare an abstract and a power-point for their annual presentation.
Assessment Students will be assessed through a short (15-20 minute) power-point presentation at the end of the course. Any administrative queries about this are to be addressed to Prof. C. Agnini.

Attendance

This course is compulsory for all PhD students reading for a Doctoral Degree in the Department of Geosciences, The University of Padova. Therefore:
•an attendance record will be kept; •when unable to attend for a good reason, (fieldwork; work abroad etc.) students will be expected to present a letter written by their supervisor to justify their absence. This can either be handed to me or emailed to borgmg@bham.ac.uk;
•Individual absences due to illness can also be communicated to me by email. More prolonged absences will need to be accompanied by a doctor's certificate.
SCHEDULE: May 15– June 21 (20 h) - see SCHEDULE for details
LOCATION: SCHEDULE for details

Prof. Giulio Di Toro (Università di Padova)
Prof. Fabrizio Nestola (Università di Padova)

The PhD student in the research world

75% ATTENDANCE MINIMUM

Part I: How to make a talk

(Lecturer: Prof. Giulio Di Toro)

Today people have limited time to make decisions. In an interview, you might have only few minutes to impact on someone, get a job and change (hopefully better!) your life. You have to prepare carefully your CV to be interviewed, but also the talk for the interview and think about the questions the people in the audience can make. Possible applications of **short talks include:**
Job interviews
Viva of B.S., M.S., Ph.D. thesis, etc.
Scientific meetings
Professional reports
Presenting your work (cooking your chicken) with a talk is an art, but there are some basic rules to avoid to ruin your chicken. And if on that day you will have a turkey, well, at least cook well that turkey. In other words, to get good feedback from a talk, you don't have to show something ***groundbreaking***, but it ***is vital to make clear what you have done and why***. People sitting in the audience wish to learn from you and often do not have knowledge on that specific topic you are going to address.
In this short course, first we will discuss a series of basic rules and suggestions* to improve your scientific and technical communication skills (case for a short talk). Then, you will prepare your short talk (12 minutes + 3' of questions) on a topic related to your research activities. The talk will be constructively commented by the entire class.

The rules and suggestions are based on (1) "lessons" I received at the Brown University (USA) during my Post-Doc from Prof. Terry Tullis and Prof. Jan Tullis, (2) my experience as a speaker, auditor, chair and convener of sessions at international meetings and (3) books and reports I read on this topic in the years.

SCHEDULE: April 29 – May 14 (10-12 h) - see SCHEDULE for details
LOCATION: see SCHEDULE for details

Part II: How to construct a strong CV

(Lecturer: Prof. Fabrizio Nestola)

This part of course will be focused on the meaning of some crucial “numbers” like the “H-index”, the “m-index”, the journal “impact factor”, the “citations”, the WoS and Scopus databases. This is the base for an international evaluation of a CV only based on numbers. Although a CV cannot be based only on these parameters, however, they are a very critical issue in all competitions in terms of the most common European grants like the ERC Grants, the MSCA fellowships (both Standard or Global), the Alexander von Humboldt fellowships and others. Also in the Italian system, a young researcher could apply for a SIR (Scientific Independence of Young Researchers), or to the “Rita Levi Montalcini Program” (if you already have a Ph.D. title and work in a foreign country) and both these two programs again use the above parameters for some parts of the CV evaluation. Finally, a very interesting program offered by our University is the so-called STARS, which is a very interesting funding program (at post-doctoral level) with the final aim to train a young researcher to apply for an ERC grant.

In addition, the Italian Ministry of Education, Universities and Research carries out a national evaluation of Italian research every 4-5 years based on what is called “VQR” (Evaluation of the Research Quality), which is determined using the above parameters. At the same time, the “ANVUR” (National Agency for the Evaluation of Universities) every year allows researchers to apply to obtain the so-called “Abilitazione Scientifica Nazionale” (ASN), which officially provides the “habilitation” to Associate Professor or Full Professor and also in this case the habilitation is to some extent related to the above parameters.

The lecture wants to face all these issues which are crucial for building an impacting CV to several research funding programs and to start an academic career in Italy or everywhere in the world.

SCHEDULE: June 17 – 9.00-16.00
LOCATION: Aula Magna “Lepschy” - DEI

BUT HIGHLY RECOMMENDED

Prof. Nicola Cenni (Università di Padova)

Introduction to time series analysis in Geosciences

75% ATTENDANCE MINIMUM

Introduction to time series analysis in Geosciences

(Lecturer: Prof. Nicola Cenni)

The monitoring of a geological and geophysical phenomena produces one o more time series. These series should be analyzed in order to estimate the parameters that characterize the time evolution of these processes. The values of these parameters are used as input at the models that reproduce these phenomena or as comparison to verify if the model reproduce the observations. Therefore a correct time series analysis is fundamental to develop a correct geological/geophysical model. This course would to describe briefly the principal methods adopted to estimate the fundamental parameters (e.g.,mean, root mean square) from a time series. During the course will be explained briefly the statistical meaning and the methods adopted to estimate these values and possible practical problems during their evaluation. The free software R will be also discussed during the course and some simple R codes about the statistical arguments treated will be shown and explained. The procedure to analyze the time series of some different geophysical observations (GPS, piezometric level, compaction and others….) will be discussed and shown. In particular, the analysis methods of a GPS time series will be argued and it will show the characteristics of these series. The general contents of the course are:

1)The fundamental values: mean, Root Mean Square, medium (mediana) weighted or not weighted
2)Autocorrelation and Correlation (Cluster analysis)
3)Least Square Method
4)Moving Window Methods
5)Spectral analysis (FFT, DFT, and Lomb Scargle method)
6)Stationary Models (ARMA)
7)GPS/GNSS time series: characteristics and problems.

SCHEDULE: June 20-27 – see SCHEDULE for details
LOCATION: see SCHEDULE for details

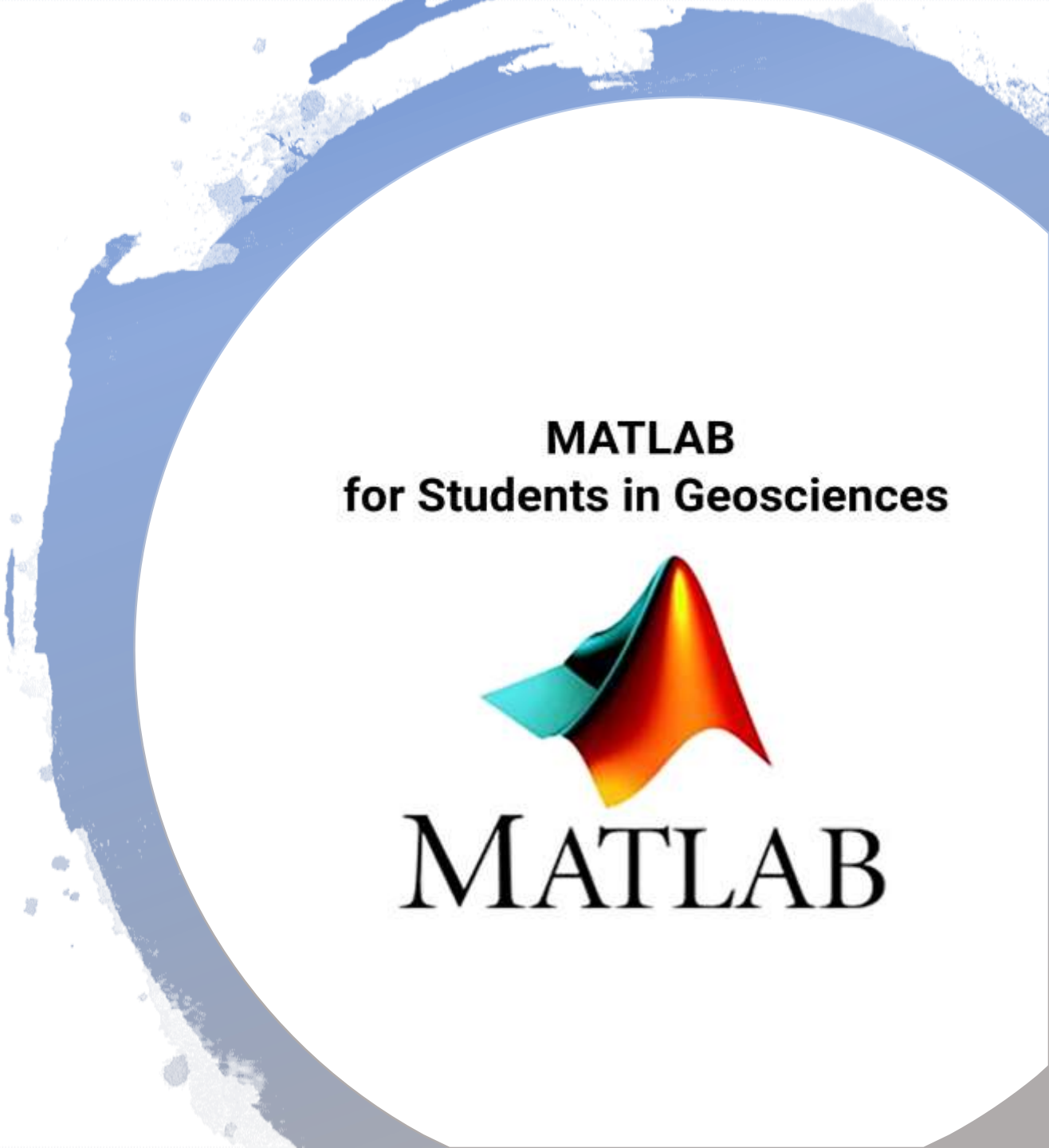
BUT HIGHLY RECOMMENDED

Prof. Lapo Boschi

(Università di Padova)

MATLAB for Students in Geosciences

75% ATTENDANCE MINIMUM



MATLAB for Students in Geosciences

(Lecturer: Prof. Lapo Boschi)

After learning the basics of MATLAB , we shall use it to solve a selection of problems in programming that are often encountered in the applied sciences: statistics, signal processing, numerical solution of differential equations, etc.

During the course, PhD students will have MATLAB laboratory sessions. The PhD Students are thus required to bring their own PC where to install the software. More info will delivered by the lecture.

SCHEDULE: May 28 -June 19 – see SCHEDULE for details
LOCATION: see SCHEDULE for details

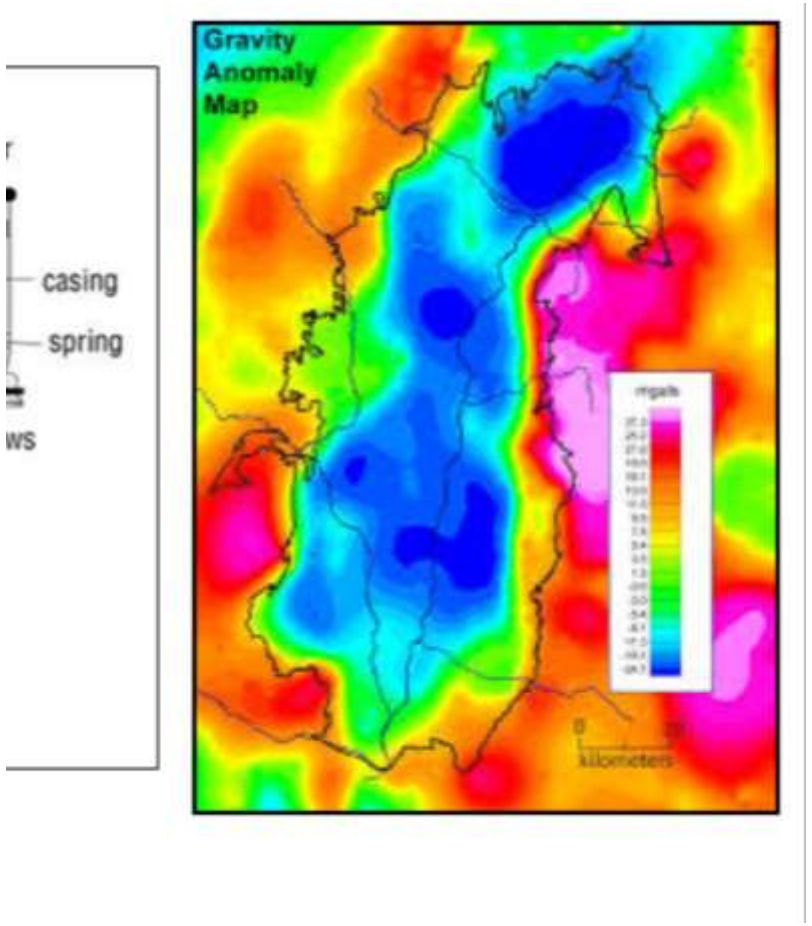
OPTIONAL

BUT HIGHLY RECOMMENDED

Prof. Albert Casas (Universitat de Barcelona, Spain)

Gravimetric methods in subsoil exploration

75% ATTENDANCE MINIMUM



Gravimetric methods in subsoil exploration

(Lecturer: Prof. Alberto Casas)

The purpose of Gravimetry is to measure the gravitational acceleration and its variations on and above the Earth's surface. The knowledge of accurate and high-resolution gravitational field determinations find applications at all scales of geophysics, from understanding the core and mantle processes to monitoring water transport in the shallow hyporheic zone.

As humans, one of the first lessons we learn is how to move under the force of gravity. Isaac Newton captured the essence of gravity as the force of attraction that exists between any two bodies, since the force of gravity upon an object is proportional to its mass, and thus the force varies with the mass considered. How that acceleration is measured is the topic of the gravimetric measurements in applied geophysics. From large scale geologic features as structural anomalies or mineral deposits (gravimetry), to small scale water content in the shallow subsoil (micro-gravimetry), density changes are associated to gravity changes (or anomalies) that can be measured and interpreted for subsoil exploration. Introduction to Gravimetry methods and case histories will be presented.

SCHEDULE: May 6-10 – see SCHEDULE for details
LOCATION: see SCHEDULE for details