



**Università  
degli Studi  
di Ferrara**

**IUSS**  
Istituto Universitario  
di Studi Superiori  
IUSS-Ferrara 1391

Università degli Studi di Ferrara  
Ufficio IUSS  
Corso Porta Mare, 2 • 44121 Ferrara  
[dottorato@unife.it](mailto:dottorato@unife.it)



## **COMPLEMENTARY SKILLS ACTIVITIES 2022**

### **“Advanced Computer Science and !R Language”**

#### **Teachers**

Dott. Damiano Azzolini

*Modulo Base*

Dott.ssa Julie Arnaud

*Modulo EGUS*

Prof. Guido Sciavicco

*Modulo SCITEC e SVISA*

Dott.ssa Julie Arnaud

*Linguaggio !R*

#### **Period**

November – December 2022



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## Course goals

This cycle of seminars intends to provide an overview of the most used IT and statistical applications used in the various subject areas. The course is structured in three parts:

- A basic module, common to all PhD Students;
- Specialized modules divided by areas;
- A “!R Language” module.

The course was organized with the collaboration of Prof. Lorenzo Pareschi – Dept. of Mathematics and Computer Science of the University of Ferrara – taking into account the suggestions and proposals presented by the PhD Students who attended the previous edition.

- **Attending at least 70% of the lesson hours** (basic module + Area module) will grant the assignment of **5 credits**.  
Basic Module + EGUS – 22 total hours – 70% = 16 hours  
Basic Module + SCITEC and SVISA – 22 total hours – 70% = 16 hours
- **Attending at least 70% of the lesson hours** (basic module + Area module + !R Language module) will grant the assignment of **6 credits**.

All interested PhD Students can enroll in the course by filling-in  
the [enrollment form](#) within **November 3<sup>rd</sup> 2022**.

***The course will only take place in person***

***No on-line lessons***



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## SCITEC E SVISA

### SPECIALIZED MODULES

**Prof. Guido SCIAVICCO**

**Recipients:** PhD Students in Architecture and Urban Planning, Physics, Mathematics, Engineering, Earth and Marine Sciences, Molecular Medicine, Translational Neurosciences and Neurotechnologies, Biomedical Sciences and Biotechnology, Chemistry, Advanced Therapies and Experimental Pharmacology

Theoretical and practical basis of data analysis

- ✓ Data mining
- ✓ Machine learning
- ✓ Tools

#### **Please Note**

- ✓ *Lessons will be in English*
- ✓ *Bring your own PC*

#### **CALENDAR**

***Lessons will take place at***

***Aula Magna IUSS – Corso Porta Mare, 2 – II floor***

	<b>Date</b>	<b>From – to</b>	<b>No. of hours</b>
Monday	7 November 2022	10:00-12:00	2
Tuesday	8 November 2022	10:00-12:00	2
Wednesday	9 November 2022	10:00-12:00	2
Thursday	10 November 2022	10:00-12:00	2
<b>Total no. of hours</b>			<b>8</b>



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## BASIC MODULE

***Dott. Damiano Azzolini***

**Recipients:** All PhD Students

- ✓ Tools for research projects
- ✓ Brief overview of different operating systems
- ✓ How to use Unife VPN
- ✓ Matlab
- ✓ Basic statistics
- ✓ Scientific publications editing tools (LaTeX) and bibliography management
- ✓ Tools for creating research-related file archives
- ✓ Basic methods for research collaboration and sharing methods
- ✓ Methods and aims of the research publication process
- ✓ for Research evaluation quality indices in Italy

### Please Note

- ✓ *Lessons will be in English*
- ✓ *Bring your own PC*

### CALENDAR

***Lessons will take place at***

***Aula Magna IUSS – [Corso Porta Mare, 2](#) – II floor***

Data		Dalle - alle	N. ore
Wednesday	16 November 2022	09:30-11:30	2
Friday	18 November 2022	09:00-12:00	3
Monday	21 November 2022	09:00-12:00	3
Wednesday	22 November 2022	09:00-12:00	3
Thursday	23 November 2022	09:00-12:00	3
<b>Total no. of hours</b>			<b>14</b>



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## **!R Language**

**Dott.ssa Julie Arnaud**

**Recipients:** All PhD Students

!R is one of the most used languages for statistical data analysis. The course is an introduction to !R Language and it aims at making students autonomous in simple and advanced data analysis

- ✓ Introduction to the R environment; Basic installation; Data Management
- ✓ Objects: structure, functioning, class/modes, indexing
- ✓ Basic and accessory graphics function
- ✓ Multivariate analysis examples, Personal projects and insights

**The Lab is intended for a maximum of 15 students per shift**

*Should there be more enrolled interested Students, please agree on possible further shifts with Dott.ssa Julie Arnaud*

### **Please Note**

- ✓ *The language will be agreed upon with the attendees*
- ✓ *Attendees must bring their own PC*

### **CALENDAR**

**Lessons will take place at**

**Aula Magna IUSS – Corso Porta Mare, 2 – II floor**

<b>Date</b>		<b>From – to</b>	<b>No. of hours</b>
Monday	28 November 2022	09:30-12:30	3
Tuesday	29 November 2022	09:30-12:30	3
Wednesday	30 November 2022	09:30-12:30	3
Thursday	1 December 2022	09:30-12:30	3
<b>Total no. of hours</b>			<b>12</b>



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## EGUS SPECIALIZED MODULE

***Dott.ssa Julie ARNAUD***

**Recipients:** PhD Students in Humanities, EU Law and National Legal Systems, Economy and Management of Innovation and Sustainability, Environmental Sustainability and Wellbeing

- ✓ Bibliography
    - Bibliographic research and databases (scopus, biblioFe, inter-university loans)
    - Bibliographic citations organization with Mendeley (lab)
  - ✓ 2) Basic statistics applied to EGUS Area
    - samplings, variables types (qualitative/quantitative)
    - dispersion parameters
    - graphic representation
    - various statistical tests presentation
  - ✓ 3) Database
    - How to build and manage a database with Excel
- ✓ *The language will be agreed upon with the attendees*
- ✓ *Bring your own PC*

### CALENDAR

***Lessons will take place at***

***Aula Magna IUSS – Corso Porta Mare, 2 – II floor***

Date		From - to	No. of hours
Monday	5 December 2022	09:30-12:30	3
Tuesday	6 December 2022	09:30-12:30	3
Wednesday	7 December 2022	09:30-11:30	2
<b>Total no. of hours</b>			<b>8</b>