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

# COMPLEMENTARY SKILLS - YEAR 2020

## "Advanced Computer Technology and *!R*"

## Professors

Dr. Arnaud Nguembang Fadja

Dr. Brunella Muttillo

Dr. Julie Arnaud

Prof. Guido Sciavicco

Dr. Francesca Tassi

## Period

December 2020 - January 2021

This seminars cycle intends to provide an overview of the most used IT and statistical applications in various areas. The course is structured into two parts: a basic module, common to all Ph.D. Students and several specialized modules divided by areas, plus a module dedicated to *!R* computer language. The course is organized ***in collaboration with Prof. Lorenzo Pareschi and Prof. Fabrizio Riguzzi,*** both at the Department of Mathematics and Computer Technology of Ferrara University.

- **Attending at least 70% of lessons hours (basic module + specific area module) grants 5 credits** for complementary skills.
- **Attending at least 70% of lessons hours (basic module + specific area module + *!R Language* module) grants 6 credits** for complementary skills.
- **Attending more specific areas modules may grant more credits.** In this case, please contact your Coordinator.

Ph.D. Students who want to attend are kindly requested to send an email to dottorato@unife.it **within November 25th, 2020** with their name, surname, Ph.D. Course and cycle.

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# BASIC MODULE GOALS

## *Dr. Arnaud Nguembang Fadja*

**Recipients:** All Unife Ph.D. Students

- ✓ IT Tools for carrying out research projects;
- ✓ Choosing the most suitable work environment and operating system;
- ✓ Using VPN under Linux;
- ✓ Tools for the editing of scientific publications (Latex);
- ✓ Matlab;
- ✓ Basic statistics;
- ✓ Tools for creating research file archives;
- ✓ Basic methods for research collaboration, sharing and versioning methods;
- ✓ Research publication process methods and aims;
- ✓ Quality evaluation indexes, with particular reference to the evaluation in Italy.

*The module will be in English*

## CALENDAR

***The module will be online***

| Date | | From – To | No. of hours |
|---|---|---|---|
| Tuesday | December 1, 2020 | 09:00 – 12:00 | 3 |
| Wednesday | December 2, 2020 | 09:00 – 12:00 | 3 |
| Thursday | December 3, 2020 | 09:00 – 12:00 | 3 |
| Friday | December 4, 2020 | 09:00 – 12:00 | 3 |
| **Total no. of hours** | | | **12** |

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# HUMANITIES MODULE GOALS

## *Dr. Brunella MUTTILLO*

**Recipients:** Ph.D. Students in Humanities, EU Law and National Legal Systems, Economics and Management of Innovation and Sustainability, Environmental Sustainability and Wellbeing

- ✓ Digital archives and data-bases;
- ✓ Scientific data and research;
- ✓ Scientific dissemination and communication;

*Professor and Students will choose this module language*

## CALENDAR

***The module will be online***

| Date | | From - to | No. of hours |
|---|---|---|---|
| Mercoledì | December 9, 2020 | 09:00 – 11:00 | 2 |
| Giovedì | December 10, 2020 | 09:00 – 11:00 | 2 |
| Venerdì | December 11, 2020 | 09:00 – 11:00 | 2 |
| **Total no. of hours** | | | **6** |

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# *!R LANGUAGE* MODULE GOALS

## *Dr. Julie Arnaud*

**Recipients:** All Unife Ph.D. Students

!R is one of the most used IT languages for statistical data analysis. The Course aims to be an introduction to the !R language and to allow students to be independent in dealing with 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 example. Personal projects and insights.

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

*Dr. Julie Arnaud will agree with Students other dates for more shifts*

*Professor and Students will choose this module language*

*All Students must have their personal computer*

**CALENDAR**

***The module will be online***

| Date | | From – To | No. of hours |
|---|---|---|---|
| Monday | December 14, 2020 | h. 09:00 – 12:00 | 3 |
| Tuesday | December 15, 2020 | h. 09:00 – 12:00 | 3 |
| Wednesday | December 16, 2020 | h. 09:00 – 12:00 | 3 |
| Thursday | December 17, 2020 | h. 09:00 – 12:00 | 3 |
| **Total no. of hours** | | | **12** |

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# SCI-TECH MODULE GOALS

## *Prof. Guido SCIAVICCO*

**Recipients:** Ph.D. Students in Engineering Sciences, Architecture and Urban Planning, Earth and Marine Sciences, Physics, Mathematics

Theoretical and practical basis of data analysis

- ✓ Data mining
- ✓ Machine learning
- ✓ IT Tools

*The module will be in English*

**CALENDAR**

***The module will be online***

| Date | | From - To | No. of hours |
|---|---|---|---|
| Monday | January 11, 2021 | 10:00 – 12:00 | 2 |
| Tuesday | January 12, 2021 | 10:00 – 12:00 | 2 |
| Wednesday | January 13, 2021 | 10:00 – 12:00 | 2 |
| Thursday | January 14, 2021 | 10:00 – 12:00 | 2 |
| **Total no. of hours** | | | **8** |

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# BIOLOGICAL-MEDICINE-LIFE SCIENCES MODULE GOALS

## *Dr. Francesca TASSI*

**Recipients:** Ph.D. Students in Biomedical Sciences and Biotechnologies, Molecular Medicine, Chemistry, Traslational Neurosciences and Neurotechnologies, Evolutionary Biology and Ecology, Environmental Sustainability and Wellbeing, Advanced Therapies and Experimental Pharmacology

Insights into the most popular IT systems and dedicated databases

- ✓ Data bases that are useful in the biological/scientific field;
- ✓ Sequences comparison: methodologies description and their use related to alignments problem, multi-alignments and the search for similarities in biological databases.

*The module will be in Italian with slides in English*

**CALENDAR**

***The module will be online***

| Date | | From – To | No. of hours |
|---|---|---|---|
| Wednesday | January 13, 2021 | 15:00 – 18:00 | 3 |
| Friday | January 15, 2021 | 15:00 – 18:00 | 3 |
| Wednesday | January 20, 2021 | 15:00 – 17:00 | 2 |
| **Total no. hours** | | | **8** |