Syllabus

Course Description

Course Title	Research Methods
Course Code	71061
Course Title Additional	
Scientific-Disciplinary Sector	INFO-01/A
Language	English
Degree Course	PhD Programme in Computer Science
Other Degree Courses (Loaned)	
Lecturers	Prof. Diego Calvanese, Diego.Calvanese@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/3562 Prof. Werner Nutt, Werner.Nutt@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/7380 Prof. Antonella De Angeli, Antonella.DeAngeli@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/30670 Prof. Marco Montali, marco.montali@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/31326 dr. Niccolò Pretto, Niccolo.Pretto@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/47860
Teaching Assistant	
Semester	First semester
Course Year/s	2025 - 2026
CP	6

Teaching Hours	36
Lab Hours	0
Individual Study Hours	114
Planned Office Hours	-
Contents Summary	• Introduction to research and scientific paper reading and writing • Research evaluation • Presenting scientific work • Good scientific writing style • Empirical/experimental CS research methods • How to write a research plan
Course Topics	The course provides an introduction to the most important research approaches and to the main research-related activities that PhD students will have to carry out during their PhD, and also if they later pursue a career as researchers in academia or industry. The main objective is to teach PhD students important basic skills that are needed to autonomously conduct research. The course covers general aspects that are relevant to research in any scientific discipline, and specifically focuses on Computer Science for illustrating the main notions and for the exercises and assignments assigned to the students.
Keywords	research methods, paper reading, scientific writing, presenting scientific work, research plan
Recommended Prerequisites	There are no prerequisites. Any student admitted to a PhD program will be able to attend the course and should be able to accomplish the assignments.
Propaedeutic Courses	
Teaching Format	The course consists of six units, taught in six different weeks by different lecturers from the Faculty of Engineering. Each unit foresees two lectures, one at the beginning of the week and one at the end of the week, of 2-4 hours each, for a total of 6 hours. For each unit, the first of the two lectures is based on frontal teaching by the corresponding lecturer, who presents the important notions for that unit and gives to the student an assignment. The students carry out the assignment in the time perido between

	the first and the second lecture, and the assignments are presented and/or discussed and/or commented in the second lecture of the unit.
Mandatory Attendance	mandatory
Specific Educational Objectives and Learning Outcomes	The course belongs to the type "area affine integrativa". It is compulsory for all students enrolled in the PhD program in Computer Science, to fulfill the credit requirements for the 1st year of the PhD. The course introduces the most important research approaches and to the main research-related activities that PhD students will have to carry out during their PhD, and also if they later pursue a career as researchers in academia or industry. The main objective is to teach PhD students some basic skills they will need when autonomously conducting research. The course covers general aspects that are relevant to research in any scientific discipline, but specifically focuses on Computer Science when illustrating the main notions and for the exercises and projects assigned to the students.
Specific Educational Objectives and Learning Outcomes (additional info.)	
Assessment	Each unit foresees an assignment, which will be communicated to the students during the first lecture of the unit. In the time period between the first and second lecture of the unit, the students should complete their assignment, and (part of) the second lecture will be devoted to discussing the assignments. The form of the assignment may vary for each unit, and is specific to the topics of the unit. The time estimated to complete each assignment is 19 hours, which, when added to the 6 hours required to attend the two lectures of the unit, results in 25 hours of work. These correspond to 1 ECTS credit. Hence, upon completion of all assignments, a student can be granted 6 ECTS credits.
Evaluation Criteria	The evaluation criteria may vary for each unit and depend on the form of the assignment.
Required Readings	The slides used for each unit will be made available by the lecturer

	of the unit in the MS Teams channel for the course. *Writing for Computer Science (3rd Edition)*. Justin Zobel. Springer. 2015. ISBN: 978-1-4471-6638-2 (Print), 978-1-4471-6639-9 (Online). Electronic edition available via the unibz library through SpringerLink.
Supplementary Readings	Consult the course web page at https://www.inf.unibz.it/~calvanese/teaching/PhD-RM/ for additional information and pointers to reading material.
Further Information	
Sustainable Development Goals (SDGs)	Industry, innovation and infrastructure, Quality education