

## Methodology of Research i

### 1. language

*Inglese*

### 2. course contents

Coordinatore/Coordinator: Prof. <**Federica Wolf**>

Anno di corso/Year Course: <**2**>

Semestre/Semester: <**2**>

CFU/UFC: <**1**>

Moduli e docenti incaricati /Modules and lecturers: <F. Wolf>

### 3. bibliography

*Slides by the teacher, internet available references, Book by the teacher*

### 4. learning objectives

*Objectives: Providing undergraduate students with the opportunity to acquire, develop, apply research skills in: information retrieval, evidence gathering, critical reading, critical reasoning with the final aim of developing capability for problem solving (scientific today and medical tomorrow).*

#### ***Knowledge and understanding (Dublin 1)***

- 1. Understanding the importance of research in own future career*
- 2. Having knowledge of research methods and understanding their applications.*
- 3. Understanding that scientific data has important implications for patients and clinical practice.*

#### ***Applying knowledge and understanding (Dublin 2)***

- 4. Formulate a simple research question and associated hypotheses*
- 5. Search for information and gather evidences relating to the research question*
- 10. Construct and explain strategies for locating relevant information*
- 11. Locate and access the required information*
- 12. Consider different sources of information, with appropriate referencing in your final piece of work*
- 13. Identify, select and apply appropriate study design and research methods for your*

*research question*

*14. Discuss the limitations of the study design and research / evaluation methods, including identification of source of bias*

*15. Construct a scholarly argument for the research rationale, including integration of evidence from literature*

### **Making judgements (Dublin 3)**

*16. Consider the ethical aspects of the research / evaluation study and be able to defend your application to an ethical committee*

*17. Consider the professional aspects of the research / evaluation study including plagiarism, consent and good scientific conduct*

### **Communication skills (Dublin 4)**

*18. Present scientific data in different forms and to different audience*

*19. Compare and critically evaluate the information obtained, including critical review and interpretation of research papers*

*20. Organize and apply information to the question, including critical discussion of your research study.*

### **Learning skills (Dublin 5)**

*21. Apply these transferable skills autonomously to independent learning specifically on: research questions, hypotheses, data retrieval, selection of papers, and critical reading.*

## **PREREQUISITES**

*None*

## **6. teaching methods**

*In the frontal lessons we will explain the contents of the methodology course: from the basic principles of the scientific research to the step by step review of the correct scientific procedure in order to be prepared to practical application of these skills.*

*Once stated the principles of scientific research, this knowledge should be applied first of all in the data search, using bibliometric data as a criteria for the selection of Journals/papers.*

*After understanding the scientific method, the student exercises the critical approach to scientific literature (critical reading)*

*After acquiring the research methodology, the student will exercise how to communicate, share and discuss scientific data in the most appropriate form depending on the audience and the setting.*

*The students will acquire transferable skills to be used during the undergraduate study but also for updating his/her knowledge in lifelong learning.*

## 7. other informations

*Each theoretical lesson will be followed by a practical lesson in the informatics laboratory where students, divided into two groups, will have to practice the different topics such as:*

- 1- Research question, key words, data retrieval, evaluation of the documents found using bibliometric approach. Selection of most relevant papers, according to bibliometric data.*
- 2- Be acquainted to the different kind of scientific research and related papers. Read an abstract and structure it according to the defined rules. Understand how a bibliography is organized.*
- 3- Practicing the critical reading of a selected research paper. Understand the role of ethical committee, definition of plagiarism and scientific fraud.*

*Written exercises will be performed through the BlackBoard platform. Inside the course contents the students will find the exercises to be developed. Evaluation of the exercises will be part of the final score.*

**Theoretical and Practical lessons will be held in remote mode (sincronous lectures and asincronous exercises) in case of restrictions due to the Covid-19 emergency.**

## 8. methods for verifying learning and for evaluation

*To sit the exam it is necessary:*

*To have the required attendance to lessons, to have loaded the 3 exercises in the Blackboard course section.*

*The final exam will be written, in the form of "Single Best Answer" (SBA test) on the basic concepts learned and practiced during the course such as knowledge and understanding, applying knowledge and understanding, communication and learning skills.*

Written tests will be administered through the Blackboard platform. Exams will be held in remote mode until restrictions due to the Covid-19 emergency will be in force. Students will be asked to download the Respondus Lockdown Browser in their PC and to take the written tests under the supervision of a video-based proctoring system, after an identification step in video/audio connection with the examiners. Should in-person exams become possible sometime in the course of the year, students will take the test within the Campus, in a PC-equipped room under the direct supervision of the teaching staff.

During exams, any portable electronic device, including mobile phones, must be switched off and put over the desk to be visible to the teacher. Violations will be referred to the Disciplinary Committee.

After exam results are posted, students are requested to confirm the acceptance of the assigned mark by e-mailing to the course secretariat within the indicated timeframe.

*To pass the exam the student will have to correctly answer >50% of the questions (equivalent to 18/30), wrong answers are not calculated as negative marks). For the final grade, the score of the test (in /30) will be summed to the score of the 3 practical exercises (each of them will score 10 points for a total of 30 points). The total number of quizzes can vary from the first to the following sessions to facilitate the very first groups.*

*The student may obtain the highest grade when: he/she correctly answered to the higher (above 27/30) number of questions and he/she presented higher score exercises.*

## 9. program

1. Definition and Aims of Research Skills.

2. The research question.

3. Research methodology: The scientific approach & the interpretative approach. (Quantitative and

qualitative).

4. *Information retrieval. Bibliometric indexes (Impact factor, H-index).*

5. *The abstract.*

6. *The scientific publication. Original papers. Reviews. Meta-analysis. Textbook. Bibliography*

7. *Critical reading of an article (Selection of articles, analysis, evaluation).*

8. *Ethical considerations. Plagiarism. Scientific fraud.*

9. *Communication of findings/scientific data. -*