

# **Research techniques and career development of a scientist**

The course introduces research tools and techniques needed for a successful PhD project and further scientific career. A prominent part of the course is related to the scientific writing and includes practical exercises where the participants will learn to give and receive feedback on their writing. The detailed content of this part is given below.

In addition skills such as creating your CV, preparing a job application, organizing your work and working in teams will be covered.

The course also covers the basic concepts and methods in artificial intelligence (AI), including specific topics such as machine learning, neural networks, and deep learning, alongside ethical issues and responsibilities in working with AI. We discuss how to develop skills that are becoming especially important in an environment where AI takes over routine tasks, leaving humans to focus on creative, strategic and managerial responsibilities..

## **Content of the Scientific Writing module:**

Basic skills and tools needed to produce well written scientific documents relevant for PhD students: reports, conference abstracts and proceedings, grant applications and the thesis. The course is (loosely) based on the book:

David Schultz "Eloquent Science: A Practical Guide."

ISBN-13: 978-1878220912

ISBN-10: 1878220918

### **Part I** Importance of Communication for Scientists

### **Part II** Writing Scientific Papers

Scientific publications. Scientific journals. The craft of scientific writing: tools and practical tips. Structure and contents of a scientific paper. References and citations. Figures. Language and style. Readability.

### **Part III** The Publication Process

Participating in peer review. Co-authors, reviewers and editors. Preparing, submitting and revising a manuscript. Responding to reviews. Correcting proofs. Ethics in science and publishing.

### **Part IV** Preparing and Delivering Scientific Presentations

### **Part V** Preparing Grant Application (example NCN PRELUDIUM)

Participants are expected to contribute with own short scientific texts (extended abstracts or short conference proceedings) to be peer reviewed and discussed during the course.

## **Part VI-VII Basics of AI and soft skills in AI era**

Introduction to AI. How machine learning works. Data processing for machine learning. Deep Learning and Neural Networks. Evaluation of machine learning results. Consequences of the use of AI. Ethics and responsibility to work with AI.

Course material: Hand-outs and suggestions for further reading.

### **Content of the Career Development module:**

#### **Organizing and Planning for Success.**

- Methods and tips of self-management
- How to set short and long-term goals based on the most effective methods and good practices
- How to effectively increase your efficiency in professional and personal life.
  - Methods of coping with stress and (mindfulness)

Trainer: Magda Jędrkiewicz

#### **Working with a team. Selected aspects of team work.**

- Dream team building practices
- Effective team meetings
- Inviting to collaboration (without formal authority)
- Being a group/team leader

Trainer: Magda Jędrkiewicz

#### **Communication and collaboration in a multicultural team.**

- Why communicate? The essence of communication
- The importance of intercultural communication
- Typologies of cultures
- Conditions for effective communication
- Barriers and mistakes to interpersonal and intercultural communication

Trainer: Monika Dembowska

#### **Building your professional brand.**

- Professional brand and its communication.
- Build personal brand
- Career management
- What recruiters for scientific positions pay attention to?
- How to write a good researcher's CV
- Self-presentation during recruitment interviews; tough questions
- OTM-R (Open, Transparent, Merit-based Recruitment) recruitment rules

Trainer: Magda Jędrkiewicz