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## Course Title: Seminar on Scientific Writing

**Modality: CFT- Transversal Training Course**

### Orientations:

- ✓ Ocean Observation and Global Change
- ✓ Sustainable use of Marine Resources
- ✓ Integral Management of the Sea
- ✓ Technological Progress, Engineering and Business Management

### Dates

July 4 and 5, 2022

### Timetable

09:30 to 13:30 and 14:30 to 18:00 (Portuguese time)

### Type of course

Seminar (15 total hours)

### Venue

University of Aveiro, room 8.1.30, Department of Biology, with Zoom and videoconference connection to the remaining Do\*Mar *campi*.

Zoom link: to be announced.

### Academic coordinator:

Name	Institution	e-mail
Henrique Queiroga	University of Aveiro	henrique.queiroga@ua.pt

### Lecturers:

Name	Institution	e-mail
José Paula	University of Lisbon	jppaula@fc.ul.pt

### Objectives

To discuss the objectives, structure and contents of the different types of texts that a scientist needs to write. As a didactic tool the emphasis is put on the IMRAD paper format, with a discussion of several practical strategies to write an IMRAD paper. Several practical exercises to help improve structured thought and presentation and synthesis capacity are explored.

### Description

The course is based on lectures and discussions addressing the scientific method, the types of scientific reports and grant proposals scientists have to write regularly, and the structure and

contents of a typical research paper. As practical exercises, students will be required i) to present their research interests, ii) to rewrite and reduce given scientific texts to retain the essence of the contents, and iii) to write a 1200 words paper based on their personal work, following the IMRAD paper format and the guidelines provided during the lectures.

**Syllabus**

1. A brief account of the scientific method
  - 1.1. The hypothetico-deductive model
  - 1.2. Characteristics of the scientific method
2. Types of scientific reports
  - 2.1. CVs and cover letters
  - 2.2. Ph D research proposals / project
  - 2.3. Theses
  - 2.4. Grant proposals
  - 2.5. The IMRAD format paper
  - 2.6. Review papers
  - 2.7. Opinion papers
  - 2.8. Books and book chapters
3. The Introduction, **M**ethods, **R**esults **A**nd **D**iscussion paper format
  - 3.1. What is required in each section
  - 3.2. The use of person, tenses, active voice, passive voice and modal verbs
  - 3.3. Abstract, Acknowledgements, References
4. How to construct and label figures and tables
  - 4.1. Figures
  - 4.2. Tables
5. Recognition, productivity and ethics in science

**Assessment**

Evaluation will be based on the following exercises:

**Exercise 1, in class.** In 1 minute, provide an oral account of your Ph D research topic.

**Exercise 2, in class.** Use the abstract provided to you in the class. i) reduce the abstract to 100-110 words and ii) reduce the abstract to 10-15 words.

**Exercise 3, to be delivered 2 weeks after the seminar.** Take 1 research unit (1 concept, 1 experiment, whatever...) from your M Sc or latest work. Present that research unit as a IMRAD scientific paper, with a maximum of 1200 words. You may include 1 figure or 1 table. Abstract (max 100 words). Introduction (max 300 words). Methods (max 200 words). Results (max 200 words). Discussion (max 400 words).

**Organization of the course**

<b>Day</b>	<b>Introduction to the course</b>
<b>1</b>	<b>Exercise 1:</b> In 1 minute, present yourself and your background, and provide an oral account of your research topic. Vote for the best presentation and discuss the positive and negative aspects of the presentations.
	<b>Break</b>

	<b>Lecture:</b> A brief account of the scientific method.
	<b>Lunch</b>
	<b>Lecture:</b> Types of scientific reports.
	<b>Discussion:</b> Discussion of particular problems faced by the students in producing scientific reports.
<b>Day 2</b>	<b>Lecture:</b> The Introduction, <b>M</b> ethods, <b>R</b> esults <b>A</b> nd <b>D</b> iscussion paper format.
	<b>Break</b>
	<b>Exercise 2:</b> Use the abstract provided to you in the class; i) reduce the abstract to 100-110 words and ii) reduce the abstract to 10-15 words.
	<b>Lunch</b>
	<b>Lecture:</b> How to prepare figures and tables.
	<b>Break</b>
	<b>Lecture:</b> Ethics in scientific writing.

**Exercise 3, to be delivered 2 weeks after the seminar.** Take 1 research unit (1 concept, 1 experiment, 1 set of samples, whatever...) from your M Sc or latest work. Present that research unit as an IMRAD scientific paper, with a maximum of 1200 words. You may include 1 figure or 1 table. Abstract (max 100 words). Introduction (max 300 words). Methods (max 200 words). Results (max 200 words). Discussion (max 400 words). In each section, highlight the different subsections used to construct it, from the “menus” discussed in the class. **This exercise is mandatory for a positive evaluation in the seminar.**

**Bibliography**

**Main bibliography**

Glasman-Deal H, 2010. *Science research writing for non-native speakers of English*. Imperial College Press, London, 257 pp.

The University of California 2012. *How Science Works*. [http://undsci.berkeley.edu/lessons/pdfs/how\\_science\\_works.pdf](http://undsci.berkeley.edu/lessons/pdfs/how_science_works.pdf)

**Other bibliography**

Day R, Gastel B, 2012. *How to write and publish a scientific paper*. 7th edition, Cambridge University Press, Cambridge, 300 pp.

Godfrey-Smith, 2003. *Theory and reality: an introduction to the philosophy of science*. University of Chicago Press, Chicago, 272 pp.

**Lecturers**

**Prof. Henrique Queiroga** (Associate Professor, Departamento de Biologia, Universidade de Aveiro (Portugal))

Professor of Marine and Estuarine Ecology and of Biological Oceanography. Director of the doctoral programmes on Marine Science, Technology and Management - Do\*Mar, and on Marine Ecosystems Health and Conservation - MARES (Erasmus Mundus). Coordinated the successful application of the Berlengas Archipelago to the Biosphere Reserves Network (UNESCO), and is a

member of the Strategic Council of the Reserva Natural das Berlengas. Has been a member of the Board of Directors of the CESAM - Centre for Environmental and Marine Studies for several years. Member of the International Advisory Board of the Coastal Research and Planning Institute (Klaipeda, Lithuania) and referee of projects submitted to the National Science Foundation (USA) and the International Foundation for Science. Principal Investigator or team member of several national and international research projects on marine ecology and on marine ecosystem services. Editor of two books and author of 100 papers in leading international journals in the area of Marine Biology. Research advisor of 19 M. Sc. students, 17 Ph. D. students and 4 post-doc researchers. Has been referee of several leading journals in the fields of zoology and marine ecology, and member of the organizing or scientific committees of 6 international conferences.

**Prof. José Paula** (Associate Professor, Faculdade de Ciências da Universidade de Lisboa/Portugal) Currently responsible for the disciplines of Marine Ecology (BSc), Tropical Marine Biology, Coastal Systems and Marine Biodiversity (MSc). Author or co-author of over 100 scientific publications, including around 90 papers in Science Citation Index journals. Has supervised numerous Licenciante, MSc and PhD theses, as well as Post-docs. Main research focus on Tropical Ecology and Statistical Ecology, in particular the coastal zone, with main emphasis on tropical marine environments – mangroves, plankton, connectivity and coastal conservation. He supervises advanced formation (MSc and PhD) at universities of Mozambique and Tanzania, and has been responsible for advanced courses for the Western Indian Ocean region, including teaching in the MSc course Aquatic Biology and Coastal Ecosystems at University Eduardo Mondlane, Mozambique, being responsible for the discipline of Advanced Marine Ecology. Was responsible for research in several programs, namely EU funded projects operating in the Eastern African coasts focusing on marine and coastal biodiversity and conservation.