Course unit name: COMMUNICATION STRATEGIES FOR CANCER RESEARCH

1.- General information

Code	303024	Plan		ECTS	3
Type	Mandatory	Course	2024/205	Periodicity	2nd Semester
Department	Cancer Research Center				
Virtual Platform	Platform:	CICLOUD			
	URL de Acces:	https://cicloud.dep.usal.es/			

Faculty

Professor Coordinator	Esther Castellano Sánchez		
Departments	Biochemistry and Molecular Biology		
Research area	Molecular mechanisms mediating tumour:stroma crosstalk		
Center	Cancer Research Center		
Office	Laboratorio 5		
Tutorials	On students demand		
URL Web	https://www.cicancer.org/grupo?id=38		
E-mail	ecastellano@usal.es	Phone	663181610 (ext. 5805)

Professor	Sandra Blanco Benavente		
Departments	Cancer epitranscriptomics		
Research area	Cancer Research Center		
Center	Laboratorio 5		
Office	On students demand		
Tutorials	https://www.cicancer.org/grupo?id=34		
URL Web	sblanco@usal.es	Phone	663181610 (ext. 5805)

Professor	Carmen Guerrero Arroyo		
Departments	Medicine		
Research area	Role of C3G in the biology of platelets and megakaryocytes. Contribution of C3G protein to pathological neoangiogenesis and tumor metastasis		
Center	Cancer Research Center		
Office	Laboratory 17		
Tutorials	On students demand		
URL Web	https://www.cicancer.org/grupo?id=55		
E-mail	cguerrero@usal.es	Phone	923294720 (ext. 4817)

Professor	Jesús Lacal Romero		
Departments	Microbiology and Genetics		
Research area	Functional genetics of rare diseases: the RASopathies		
Center	Edificio Departamental – Faculty of Biology		
Office	324		
Tutorials	On students demand		
URL Web	http://diarium.usal.es/jlacal/inicio-3/		
E-mail	jlacal@usal.es	Phone	923 663 030 885

2.- The course in the context of the Master´s Program

Treaning Module

Second semester. This module will be part of group 5 (March-April). Students will learn how to present their projects in different formats including but not limited to posters and reports. Therefore, it is convenient a few months of previous lab work to become familiar with their projects and have some data to work with in this course.

General aim of the subject

The overall goal of this course is to teach students, with the necessary skills and knowledge, how to effectively communicate and disseminate scientific concepts, findings, and advancements in the field of Biology and Cancer Clinical Research.

Through this module, students will develop key skills in various communication strategies, including written, oral, and visual communication techniques, enabling them to engage diverse audiences, including peers, experts, policymakers, and the general public. By fostering clear, compelling, and ethical communication practices, students will contribute to the advancement of scientific knowledge, public understanding, and societal

impact in the field of cancer biology and clinical research.

The learning objectives include lessons to learn how to communicate scientic projects and data to a scientific and a non scientific audience. In scientific communication scientific-technical language is used and it must meet minimum requirements of objectivity, rigor and clarity.

Good Communication and dissemination skills will lead to the achievement of key milestones such as the funding of a project or the acceptance of a paper within the scientific community, among others. Future scientists must be able to communicate their findings efficiently to both the scientific community and the general public.

Professional specialization
Master in the Biomedicine area

3.- Previous recommendations

Students will have to fulfil the general requirements applied to the MSc programme.

This module will be taught in English, therefore, a good level of English is highly recommended.

4.- Aims of the subject

Skills acquisition will be facilitated through a series of theoretical lectures and interactive workshops and presentations. The theoretical sessions will include didactic presentations delivered by instructors, offering foundational insights into various formats of scientific dissemination. These formats include theses, scientific outreach for non-specialist audiences, scientific presentations (utilizing tools like PowerPoint), data analysis and interpretation in poster format.

These theoretical sessions will provide students with essential knowledge and understanding of the principles underlying each mode of scientific communication. Through interactive workshops and presentations, students will have the opportunity to apply these concepts in practical scenarios, sharpening their proficiency in effectively conveying scientific information across diverse platforms and audiences.

At the end of this course, students will have acquired practical skills in terms of:

• Present a poster based on their TFM project.

• Write a brief thesis report.

• Present their TFM project to non-specialized public (Secondary School students).

On top of the new knowledge students will improve/gain the following soft skills:

• Written communication.

• Verbal communication in the context of different types of audiences.

• Interpret and communicate scientific data.

• Organize, synthesize and write complex scientific reports.

• Present quantitative information in an objective way.

he specific attributes that students will get are:

• Improve their ability for written communication.

• Improve their capacity for verbal communication, learning to adapt to different types of audiences.

• Learn to read and interpret scientific data.

• Learn to find, organize, synthesize and write complex scientific information in a clear and interesting way and to present information in an objective way.

• Improve their ability to present quantitative information in an objective way.

5.- Contents

The program is presented below the subject presented in sections:

SECTION 1: THE NEED FOR SCIENCE COMMUNICATION

- The scientific method
- The scientific “language”
- The different forms of communication in science
- Effective communication

SECTION 2: SCIENCE COMMUNICATION

- What is Science communication?
- The different formats of presentation to a non-expert audience

SECTION 3: PRESENTATION OF CONCEPTS AND SCIENTIFIC DATA

- Interpretation and presentation of scientific data.
- How to structure a presentation
- Talks vs Poster. Differences and similarities
- Examples of good and bad presentations

SECTION 4: WRITING A SCIENTIFIC PROJECT

- Presentation and evaluation of an extensive scientific work: Master Thesis
- Structure of the Master Thesis
- Presentation of data

Workshop program

In this module, the emphasis is on preparing students for real-world communication scenarios essential to their professional journeys. Consequently, workshops and presentations will take precedence over theoretical classes, ensuring ample time for hands-on learning and guidance in project preparation. Students will have to work on:

- Write a brief Master thesis report. Students will write a thesis report of a maximum of 2000 words, 5 figures and a maximum of 50 references based on their own project. This will provide a first attempt to write their final Master Thesis. Students will be encouraged to start writing from the first week of this module in order to receive as much guidance and supervision as possible. Deadline to present their Master Thesis will be the last day of this module.

- Prepare a talk for non-scientific public. Students will visit nearby secondary schools with the aim of sharing essential insights about cancer, covering topics such as its nature, treatment, and prevention. Additionally, they will provide a concise overview of their project. Following the presentation, Master's students will actively engage with secondary school attendees, addressing any queries they may have.

- Present a poster. Students will present their own TFM project in a poster. Posters will be exhibited at CIC premises for 2 days. Students will be asked to be on their posters 1 day for 2 hours so they can answer questions from the atendees. Posters will be evaluated by 3 researchers from the institution.

6.- Skills to be acquired

Basic skills

The basic skills to be acquired by students in this module may include:

- Effective Communication: students will learn written, oral, and visual communication techniques to convey scientific concepts clearly and persuasively.

- Audience Adaptation: Students will gain ability to tailor communication strategies to suit diverse audiences, including scientific peers, policymakers, funding bodies, and the general public.

- Scientific Writing: students will acquire proficiency in crafting scientific documents such as research papers, reports, and proposals with accuracy, objectivity, and clarity.

- Presentation Skills: students will acquire competence in delivering engaging and informative presentations using appropriate visual aids and communication tools.

- Data Analysis and Interpretation: students will increase their capacity to analyze and interpret scientific data accurately, and present findings in a comprehensible manner.

- Critical Thinking: students will develop critical thinking skills to evaluate scientific literature, identify key messages, and synthesize complex information effectively.

- Media Literacy: students will acquire awareness of how scientific information is portrayed in various media outlets and strategies for engaging with media to communicate research effectively.

- Professionalism: students will acquire professional attitudes and behaviors, including teamwork, time management, and adherence to ethical standards in scientific communication.

Specific skills

-Students will be able to know how to communicate their conclusions and the ultimate knowledge and reasons that support them to specialized and non-specialized audiences in a clear and unambiguous way.

-Students will be able to develop their ability to understand and critical assessment about specialized scientific publications on this field.

- Students will be able to apply the scientific method to the experimental approaches that are used in cancer research.

- Students will be able to integrate new knowledge in the field of Molecular Cancer Biology, and develop their ability for self-learning.

Transversal skills

-Students will know how to apply the knowledge acquired and their ability to solve problems in new or uncertain environments within broader (or multidisciplinary) contexts related to the Molecular and Cellular Biology Cancer research area.

7.- Teaching methodology

Teaching methodologies will consist of a combination of lectures and practices. Attendance is mandatory.

8.- Estimated learning time

		Hours tutored by the teacher		Individual work (hours)	TOTAL HOURS
		Attendance required (hours)	Distance learning (hours)		
Lectures		30			30
Practices	- In classroom				
	- In laboratory				
	- In computer classroom				
	- Countryside				
	- Visualization classroom				
Seminars					
Work presentations and debates		10		15	25
Tutorials					
Online activities					
Work preparation				20	20
Other activities					
Exams - evaluation					
TOTAL		**40**		**35**	**75**

9.- Materials

Books

• Connection: Hollywood Storytelling meets Critical Thinking, Dr Randy Olson

• Championing Science: Communicating Your Ideas to Decision Makers, Dr Roger Aines and Amy Aines

• If I Understood You, Would I Have This Look on My Face?: My Adventures in the Art and Science of Relating and Communicating. Alan Alda

• Escape from the Ivory Tower: A Guide to Making Your Science Matter. Nancy Baron

• The Sense of Style: The Thinking Person's Guide to Writing in the 21st Century. Steven Pinker

Other bibliographical, electronic references or any other type of resource

Divan, A. 2009. COMMUNICATION SKILLS FOR THE BIOSCIENCES. Ed. Oxford

• Bowater, L., Yeoman, K. 2012. Science Communication: A Practical Guide for Scientists. Ed. Wiley

• Van der Brul, C. 2013. Crackle And Fizz: Essential Communication And Pitching Skills For Scientists. Ed. Imperial College Press

• Willis, J. 2005. DATA ANALYSIS AND PRESENTATION SKILLS: AN INTRODUCTION FOR THE LIFE AND MEDICAL SCIENCES. Ed. Wiley

• Davis, M.; Davis, K.J.; Dunagan, M. 2012. SCIENTIFIC PAPERS AND PRESENTATIONS. EFFECTIVE SCIENTIFIC COMMUNICATION. 3rd Edition. Ed Academic Press.

10.- Assessment

Assessments on the performance of the student

The evaluation will consist of the following components:

• Thesis report (30%): contents, clarity of presentation, organization and correct use of tables, figures and references will be evaluated.

• Presentation to non-scientific public: content, clarity of presentation and presentation skills (30%).

• Poster (30%): content, clarity of data, methodology and presentation will be evaluated.

• Class participation (10%): student engagement in the face to face classes.

Students will be required to apply what they have learned during the lectures.

Recommendations

1. **Engage Actively:** Actively participate in class discussions, workshops, and practical exercises. Engaging with the material and fellow classmates enhances understanding and retention.
2. **Practice Regularly:** Dedicate time outside of class to practice science communication techniques such as writing, public speaking, and visual communication. Regular practice improves proficiency and confidence.
3. **Seek Feedback:** Be open to feedback from instructors and peers. Constructive criticism helps identify areas for improvement and refine communication skills.
4. **Tailor to Audience:** Consider the needs and knowledge level of your audience when communicating scientific concepts. Adapting your message to resonate with diverse audiences improves clarity and impact.

Stay Updated with emails and notifications from the instructors.