CYA Syllabus

COMM 320 Science Communication
Spring Semester

Course Instructor(s): Dr Aimilia Smyrli
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(Office) Hours Available: TBA

Course Description

This course will provide both a practical and a theoretical approach to science communication. Communicating scientific results effectively is an essential skill nowadays since not only can it lead to fruitful collaborations but it can also result in obtaining important funding (as public engagement is a key factor in every researcher's application for a grant) which can help further develop a scientific project. More importantly, it can have a positive impact on society by increasing the Science Capital, promoting scientific literacy and thereby tackling pseudoscience and the increasing lack of public trust in scientists. The main purpose of the course is to highlight the importance of effective science communication and present the various ways through which it can have a positive long-lasting influence on a wide range of audiences (such as creating collaborations on an academic level, building trust with the general public and inspiring young school students to follow STEM related subjects at school and later at University). In more detail, the students will learn how to share key findings and results from different research groups at NCSR "Demokritos" and measure the impact that this communication can have both on society and on the research center. This means the students will initially familiarize themselves with the scientific method and the different types of scientific research on different topics (such as lab work in nanoscience or theoretical work in nuclear physics), they will then learn how to share this information with different audiences. Lastly, in order for their work to be meaningful, they will evaluate their projects and measure the impact they may have.

Course Approach

Key topics will be covered through lectures, discussions, workshops and interactions with researchers. The students will be informed, by interviewing our researchers, about up-to-date on-going research in the different Institutes of NCSR "Demokritos". They will then communicate the methods and results of this research through different approaches to a range of diverse audiences (i.e. the general public, school children, teachers and parents). These approaches include science writing and storytelling, public speaking, a wide use of social media, participation in outreach events, and the development of an activity for primary or high school students. They will require both individual and team work.
The students will interact with some of the best researchers; they will be able to apply what they have learned in practical settings and receive feedback so they can develop their communication skills throughout the duration of the module.

Learning Objectives

By the end of the course, the students should be able to:

1. Understand the scientific method and the different types of scientific research, in other words, understand how researchers think and act in different fields such as nanotechnology, nuclear physics, telecommunications and biology.
2. Recognize the important role of scientific literacy in society.
3. Communicate important scientific results obtained at NCSR "Demokritos" effectively to different audiences. This means that they will be able to adapt their method according to the audience (age, societal background, knowledge, scientific or not).
4. Use different ways of communicating science effectively: storytelling, presentations, social media, writing, visual media.
5. Learn about pedagogical approaches in teaching science and create activities for the classroom based on research relevant to the NCSR "Demokritos".
6. Evaluate the impact of their science communication efforts and reflect on the feedback in order to improve their skills and projects.

Course Requirements

- A variety of assignment types:
  An essay (to be submitted on Week III), storytelling (written and oral presentations, to be presented on Week VI),
  An assignment on how to create outreach material based on different types of audiences (to be submitted on Week VIII),
  Create a video (to be submitted on week Xb) and work on evaluation forms (to be submitted on Week XIIa)
- 40-50 pages reading a week for classes
- At least 10 pages of individual research work in science communication (including what works, what needs to be improved, different approaches that have been explored)

Class Field Work

From Week II until Week IX, the students will be interacting with the researchers working in the different Institutes of NCSR "Demokritos". They will shadow them in their labs and in their experiments in order to understand the scientific method and what the researchers are actually doing on a daily basis so that they can then effectively communicate their research to different audiences.

CYA Field Study

N/A

Evaluation and Grading

Your grade for this course will be based on the following distribution:

Percentages

Assignment 1 – Short essay on the importance of Science Communication in modern society - 10%

Assignment 2 – Storytelling, presentations and science writing to promote the research happening here - 25% Assignment 3 – Design an activity related to up-to-date research happening at NCSR "Demokritos" based on your audience - 30%

Assignment 4 – Digital Communication Assignment - 20%
Assignment 5 - Evaluating your impact and reflect on it in order to improve - 15%
Classroom participation is required for this course. Each absence will reduce the final grade by 2%.

Evaluation Criteria - Course Assignments

Assignment 1: Essay on the Importance of Science Communication
- Criteria 1: Organization and Structure
- Criteria 2: Understanding the theory, clarity of message
- Criteria 3: Bibliography

Assignment 2: Storytelling. The students will be split in different groups, and each group will read a paper published by a team of researchers at NCSR "Demokritos" and then deliver both written and oral presentations related to this paper.
- Criteria 1: Structure: clear, logical, easy to understand written document and presentation
- Criteria 2: Team work

Assignment 3: Design an outreach activity based on up-to-date research adjusted to different audiences.
- Criteria 1: Clarity of Purpose, clearly show why this activity is targeted at the specific audience
- Criteria 2: Accessibility, Inclusivity, safety considerations of the activity
- Criteria 3: Team Work

Assignment 4: Digital communication assignment – 5 minute video
- Criteria 1: Planning and Preparation: interviewing researchers, connecting the video to the High School curriculum in order to design and offer an activity that can have an impact and inspire the young students
- Criteria 2: Team work
- Criteria 3: Quality of the video (material presented, way it is presented).

Assignment 5: Evaluation of Outreach Activities

- Criteria 1: Designing the form (when was it designed? How, what was the critical thinking that led to it? Connect it to related references)
- Criteria 2: Analysis of the evaluation forms, identify key results

CYA Regulations and Accommodations

Attendance Policy

CYA regards attendance in class and on-site (in Athens or during field study trips) as essential. Absences are recorded and have consequences. Illness or other such compelling reasons which result in absences should be reported immediately to the Student Affairs Office.

ePolicy on Original Work

Unless otherwise specified, all submitted work must be your own original work. Any ideas taken from the work of others must be clearly identified as quotations, paraphrases, summaries, figures etc., and accurate internal citations and/or captions (for visuals) as well as an accompanying bibliography must be provided (Check the Student Handbook).

Use of Laptops

In-class or onsite use of laptops and other devices is permitted if this facilitates course-related activities such as note-taking, looking up references, etc. Laptop or other device privileges will be suspended if devices are not used for class-related work.

Class Schedule

Day/Date/Place (if applicable)	Topic / Readings / Assignments Due
Week Ia	**Introduction to Module** *Description* Introduction to the objectives and expectations of the module. Present what NCSR "Demokritos" is, the different Institutes (and hence different fields of research) and the researchers with whom the students will interact throughout the duration of the module. *Required reading* Class slides the web page of each Institute of NCSR Demokritos Bowater, L. and Yeoman, K. (2013) *Optional bibliography* Nisbet, M. C., & Scheufele, D. A. (2009)
Week Ib	**Introduction to Science Communication and its Importance** *Description* Defining Science Communication and its Importance *Required reading* Class slides the web page of each Institute of NCSR Demokritos Fischhoff, B.& Scheufele, D. A. (2013). Fischhoff, B.& Scheufele, D. A. (2014). Fischhoff, B.& Scheufele, D. A. (2019). *Optional bibliography* Nisbet, M. C., & Scheufele, D. A. (2009). *Required Assignment* Essay (Assignment 1)
Weeks IIa & IIIa	**Different methods of Science Communication: Writing** *Description* Basic concepts of scientific writing. *Required reading* Class slides

	Alley, M. (4th edition, 2018) Dahlstrom, M.F. (2014) *Optional bibliography* Grady, S.M. et al, (2022) *Required Assignment* Submit Essay (Assignment 1) on Week IIIa
Week IIb & IIIb	**Meeting with the team of Researchers** *Description* The students will meet with the team of researchers they are assigned to and shadow them in their lab. The shadowing will continue in the coming weeks for an hour each day. *Required reading* Class slides Alley, M. (4th edition, 2018) Dahlstrom, M.F. (2014) *Optional bibliography* Grady, S.M. et al, (2022) Giles, C. (2014)
Week IVa & Va	**Different methods of Science Communication: Presentations** *Description* Basic concepts of oral presentations and public speaking. *Required reading* Class slides Alley, M. (2nd edition, 2013) Dahlstrom, M.F. (2014) *Optional bibliography* Carter, M. (2nd edition, 2020) *Required Assignment* Written and oral presentations based on a scientific paper (Assignment 2)
Weeks IVb & Vb	**Meeting with the team of Researchers** *Description* The students will meet with the team of researchers they are assigned to and shadow them in their lab. The shadowing will continue in the coming weeks for an hour each day. *Required reading* Class slides Alley, M. (2nd edition, 2013) Dahlstrom, M.F. (2014) *Optional bibliography* Matt Carter (2nd edition, 2020) Giles, C. (2014)
Weeks VIa & VIIa	**Know your Audience** *Description* Identifying and analyzing various target audiences. Tailoring communication strategies to meet their needs and interests. Adapting communication for diverse audiences. Practice in class: Present a specific topic to different target audiences *Required reading* Class slides National Academies of Sciences, Engineering, and Medicine; Division of Behavioral and Social Sciences and Education; Committee on the Science of

	Science Communication: A Research Agenda. (2017) Rowland, Susan & Kuchel, Louise (2023) *Optional bibliography* Hutchins, Jessica.A. (2021) *Required Assignment* Release on Week VIa: Prepare an outreach activity based on your audience (Assignment 3)
Weeks VIb & VIIb	**Shadowing the Researchers & Presenting Assignment 2** *Description* From this week onwards, students start to design an activity related to the lab work they are shadowing. They will meet with the team of researchers they are assigned to and shadow them in their lab. They will make notes on the methodology used. *Required reading* Information related to the researchers being shadowed and the papers they have published. *Optional bibliography* Giles, C. (2014) *Required Assignment* Present Assignment 2 during week VIb & Work on Assignment 3
Weeks VIIIa & IXa	**Social Media and Science** *Description* Using Social Media (Twitter, Facebook, Instagram) for effective Science Communication. *Required reading* Class slides Thorp, H.Holden (2022) *Optional bibliography* Nisbet, M. C., & Scheufele, D. A. (2009). *Required Assignment* Release Assignment 4 on Week IXa
Weeks VIIIb & IXb	**Shadowing the Researchers** *Description* In the next couple of weeks, students will create a video inside the labs. They will meet with the team of researchers they are assigned to and shadow them in their lab. They will make notes on the methodology used. *Required reading* Class slides Thorp, H.Holden (2022) Information related to the researchers being shadowed and the papers they have published. *Optional bibliography* Nisbet, M. C., & Scheufele, D. A. (2009) Giles, C. (2014) *Required Assignment* Submit Assignment 3 on Week VIIIb Digital Communication Assignment
Week Xa	**Evaluation** *Description* The Importance of Evaluation in Science Communication and Public

	Engagement. Methods and tools. *Required reading* Class slides Harrison, N., (2016) Clements, N. et al,. (2022) *Required Assignment* Release Evaluating your work (Assignment 5)
Week Xb	**Evaluation** *Description* The Importance of Evaluation in Science Communication and Public Engagement. Methods and tools. *Required reading* Class slides Thorp, H.Holden (2022) *Optional bibliography* Nisbet, M. C., & Scheufele, D. A. (2009) Giles, C. (2014) *Required Assignment* Submit Assignment 4 and Assignment 5- Evaluating your work.
Week XIa	**Diversity and Equity in Science Communication** *Description* This week we will emphasize the role of science communicators in addressing underrepresentation, bias, and inequality in the field. *Required reading* Class slides Judd K., McKinnon M., (2021) *Optional bibliography* Golle J. et al, (2022) *Required Assignment* Evaluating your work (Assignment 5)
Week XIb	**Diversity and Equity in Science Communication** *Description* This week we will emphasize the role of science communicators in addressing underrepresentation, bias, and inequality in the field. *Required reading* Class slides Judd K. and McKinnon M., (2021) *Optional bibliography* Golle J. et al, (2022) *Required Assignment* Evaluating your work (Assignment 5)
Week XIIa & XIIb	**Summary of the module – Feedback on progress made and reflection on tutor** *Description* In the final week we will highlight the most important topics we worked on during this module. Feedback will be provided on the general progress the students have made and also the tutor is going to reflect on their work.

N.B.: The course schedule, in terms of subjects and readings, may be subject to change to benefit student learning and to keep up to date with current research.

COURSE BIBLIOGRAPHY

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