

STUDY GUIDE

Illuminating Solutions: Light-Matter Interactions for Health, Energy & Environmental Breakthroughs

Course/training name	Winter School LUMOMAT : light-matter interactions
Host Institution(s)	Nantes Université
Co-organising Institution(s) (if applicable)	USP (Universidade de São Paulo)
Course level (if applicable)	Bachelor 3 rd year, 4 th year Master 1 st year
Name and faculty of the lecturer(s)/trainer(s)	Clémence Queffelec –Ceisam, Nantes Université - Vincent Coëffard –Ceisam, Nantes Université Thomas Devic, IMN, Nantes Université Erick Bastos – Instituto de Química, Universidade de São Paulo
Mode of delivery	On campus
Location (if applicable)	Nantes Université, Faculty of Sciences and Technology
Dates of the <u>online</u> component (if applicable)	

Dates of the on-site component (if applicable – travel dates excluded)	From 25 February 2027 to 02 March 2027											
Cost	This short-term mobility offers involves travel and subsistence costs. Make sure to contact your local mobility officer and/or EUniWell team to get more information on potential mobility grants.											
Application procedure	Application form on the EUniWell Courses and Training Catalogue <i>Specific process (if any):</i>											
Target audience(s)	☒ Bachelor's ☒ Master's ☐ PhD ☐ Educators ☐ Researchers ☐ Administrative staff											
Selection criteria	- Knowledge of organic chemistry, spectroscopy, theoretical chemistry and/or electrochemistry - Methodological notions in Chemistry - Motivations to participate in this Winter School											
Prerequisites	Bachelor's (3 rd year minimum) or master's students in chemistry											
Language(s) of instruction and recommended CEFR level	English – B2 Level											
Main Thematic Arena(s)	☒ Arena 1 - Health and Well-Being ☐ Arena 2 - Social Equality and Well-Being ☒ Arena 3 - Environmental change and Well-Being ☒ Arena 4 - Culture, Multilingualism and Well-Being ☐ Arena 5 - Teacher Education and Well-Being ☐ Transversal ☐ Well-Being Centre for Doctoral Students and Post-Doctoral Researchers											
Field(s) of research / study	Chemistry											
Related Sustainable Development Goals (SDG)	<table border="1"> <tr> <td>☐ 1 - No poverty</td> <td>☐ 10 - Reduced inequalities</td> </tr> <tr> <td>☐ 2 - Zero hunger</td> <td>☒ 11 - Sustainable cities and communities</td> </tr> <tr> <td>☒ 3 - Good health & well-being</td> <td>☒ 12 - Responsible consumption & production</td> </tr> <tr> <td>☐ 4 - Quality education</td> <td>☒ 13 - Climate action</td> </tr> <tr> <td>☐ 5 - Gender equality</td> <td>☒ 14 - Life below water</td> </tr> </table>		☐ 1 - No poverty	☐ 10 - Reduced inequalities	☐ 2 - Zero hunger	☒ 11 - Sustainable cities and communities	☒ 3 - Good health & well-being	☒ 12 - Responsible consumption & production	☐ 4 - Quality education	☒ 13 - Climate action	☐ 5 - Gender equality	☒ 14 - Life below water
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	☐ 6 - Clean water & sanitation	☒ 15 - Life on land
	☒ 7 - Affordable & clean energy	☐ 16 - Peace, justice & strong institutions
	☐ 8 - Decent work & economic growth	☐ 17 - Partnerships for the goals
	☒ 9 - Industry, innovation & infrastructure	
Number of ECTS	3	
Workload in hours	75 hours (4 days of lectures)	
Key words	Photochemistry	Photomedicine
	Energy	Environment
	Molecule	
Catch Phrase	<i>Illuminating Solutions: Light-Matter Interactions for Health, Energy & Environmental Breakthroughs</i>	
Total number of places for EUniWell participants	10	
Abstract	From the mastery of fire to the present day, the evolution of humanity has been closely linked to light. Shining light on a molecule or material can induce remarkable phenomena at the infinitesimal scale of atoms and molecules. Over the past decades, these phenomena have been harnessed by chemists in numerous scientific fields, including energy production, healthcare, and environmental science. It is clear that light will continue to shape humanity's future, but how? During the LUMOMAT Winter School, students and world-class researchers will discuss recent advances and future directions in research fields dedicated to light-matter interactions. The scientific program will combine invited talks and workshops aimed at developing innovative solutions to address challenges in the fields of health, environment, and energy.	
Programme / session(s)' schedule	Day 1: AM: Plenary Session: Issues of Light-Matter Interaction for Sustainable Energy Keynote Speaker: Dr. Thomas Devic (IMN) Guest Speakers: to be determined PM: Visits to Ceisam and IMN laboratories. Presentations on the research being conducted by doctoral students on the three targeted themes Day 2: AM: Plenary Session: Issues of Light-Matter Interactions in meeting Environmental Challenges Keynote Speaker: Dr. Clémence Queffelec (CEISAM) Guest Speakers: to be determined PM: France-Brazil online challenge, session 1/3 A workshop blending teams participating in the Thematic School with teams from the Graduate Program in Chemistry at the University of São Paulo	

	Day 3 & 4: Exploring Nantes and the surrounding region Day 5: AM: Plenary Session: Issues of Light-Matter Interactions for the Future of Health Keynote Speaker: Dr. Vincent Coeffard (CEISAM) Guest Speakers: to be determined PM: France-Brazil online challenge, session 2/3 Supervised group projects Day 6: AM: France-Brazil online challenge, session 3/3 Final presentation of the challengers' work PM: A prospective approach: becoming a researcher in the face of environmental and societal challenges Closing ceremony.
Developed skills and competences	Collaborate and develop your network in an intercultural context. Discover and understand the challenges and areas of application of recent research related to the interaction between light, molecules, and matter, particularly through the targeted topics: - A healthier future with light for at home treatment - Light-based technologies to tackle the challenge of water pollution - Energy and light: past, present and future On workshops: Methodological skills in chemistry Processing information and dealing with problem Generate new ideas or combine existing ones to develop innovative, novel solutions. Communicating and collaborating in a teams and networks Taking a pro-active approach
Objectives and learning outcomes	Develop advanced knowledge in photochemistry and related disciplines. - Apply critical analysis to contemporary challenges in photosciences. - Cultivate an informed understanding of the role of light in the synthesis and application of molecular systems. - Improve scientific communication skills. - Foster collaboration and networking - Expand the possibilities for student experience
Assessment methods and criteria, including grading scale (if applicable)	Attendance at plenary sessions and active participation in the workshops. End-of-session evaluation and group presentation

Type of certification issued upon attendance or completion	EUniWell certificate of attendance
Contact	List of local EUniWell catalogue's coordinators available here. <i>For questions related to the content of the course, please contact the offer's Institution's local catalogue coordinator. For questions related to administration, mobility or recognition the course in your curricula, please contact home Institution's local coordinator.</i>