EUROPEAN UNIVERSITY

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EUROPEAN UNIVERSITY FOR CUSTOMISED EDUCATION

STUDY GUIDE

EXPLOITING SELF-ASSEMBLY IN AQUEOUS SOLUTION TO DESIGN FUNCTIONAL DEVICE

Organised by

University of Catania

Brandenburg University of Technology Cottbus - Senftenberg · UC Universidad de Cantabria · Università di Catania · Université Polytechnique Hauts-de-France · UMONS University of Mons · University of the Peloponnese · Vaasan yliopisto University of Vaasa · Politécnico de Viseu

1. IDENTIFYING DATA.	
· Course Name.	Exploiting self-assembly in aqueous solution to design functional device
· Coordinating University.	University of Catania
· Partner Universities Involved.	Brandenburg University of Technology (Germany), Polytechnic University of Hauts-de-France (France), Poznan University of Technology (Poland), University of Mons (Belgiium), University of Cantabria (Spain) e University of Vaasa (Finland), l'Università del Peloponneso (Greece), l'Istituto Politecnico di Viseu (Portugal) e l'Università di Karlstad (Sweden)
· Course Field(s).	Supramolecular Chemistry
· Related Study Programme.	PhD
· ISCED Code.	8: Doctoral or equivalent level
· SDG.	7 - Affordable and clean energy
· Study Level.	D
· EUNICE Key Competencies	[Indicate the Key Competencies required for the course.] • Green – strongly • Orange- moderately • Red – partially • Blank cell - not at all

Problem solving	
Teamworking	
Communication	
Self-management	
Cognitive flexibility	Orange
Digital competence	

	Technical competence	Orange
	Global intercultural competence	Orange

· Number of ECTS credits allocated.	3
· Mode of Delivery.	Onsite and online for EUNICE students
· Language of Instruction.	Italian and English
· Course Dates.	March/April
· Precise Schedule of the Lectures.	12 h
· Key Words.	Supramolecular Chirality, molecular machine, supramolecular devices
· Catchy Phrase.	Playing with molecules to create supramolecular architectures

· Prerequisites and co-requisites.	- Student must have a good chemistry base; - The study levels this course is available for D; - Required linguistic skills: English
· Number of EUNICE students that can attend the Course.	50
· Course inscription procedure(s).	[Indicate the registration procedures if it differs from the standard EUNICE process]

2. CONTACT DETAILS.	
· Department.	Chemical Science
· Name of Lecturer.	Alessandro D'Urso
· E-mail.	adurso@unict.it
· Other Lecturers.	none

3. COURSE CONTENT.
Initially, the course will briefly address the first principles that are the basis of supramolecular chemistry. Subsequently, with an eye to natural systems, the student will be led to the understanding of self-assembly phenomena to allow a design of supramolecular devices. For this purpose, an overview of the applications related to biotechnology will also be presented (Sensors, Logic gates,

On-off switches). Finally, particular attention will be paid to supramolecular stereochemistry, therefore to intrinsic and induced chirality and the phenomena and applications that can be generated such as chiral memory and conformational probes.

4. LEARNING OUTCOMES.

The student will know the main non-covalent interactions, and how to exploit them to design a supramolecular systems. The student will learn the instrument used to detect chirality (spectropolarimeter). The student will get to know the most recent literature on this field and the current experimental research strategies applied to obtain supramolecular functional devices

5. OBJECTIVES.

The basis of supramolecular chemistry
Stereochemistry and Chirality
Experimental method to study supramolecular systems

6. COURSE ORGANISATION.

UNITS	
1.	First principles of supramolecular chemistry
2.	Supramolecular systems in nature
3.	Chirality and induction of chirality
4.	How to design a supramolecular device

LEARNING RESOURCES AND TOOLS.

Lecture slides, literature, books

PLANNED LEARNING ACTIVITIES AND TEACHING METHODS.

Lectures

7. ASSESSMENT METHODS, CRITERIA AND PERIOD.

Oral exam at the end of the course

OBSERVATIONS.

8. BIBLIOGRAPHY AND TEACHING MATERIALS.

Literature on line:
https://scholar.google.com/scholar?hl=it&as_sdt=0%2C5&q=supramolecular+chemistry+review&btnG=&oq=supramolecular+chemistry
Slides of the lectures