Empower Academia for Knowledge Transfer for Value Creation in the Atlantic Area

Learning tool for the KT & Innovation workshops of the Academia Innovation Enhancer

Partner: FCT/NOVA
Date: 08/05/2020

This project has received funding from the European Union's Interreg Atlantic Area programme through the European Regional Development Fund, project code: EAPA_842/2018. This output reflects only the author's view and the European Union cannot be held responsible for any use that may be made of the information contained therein.

Presentation:

The present document aims to present the modules and contents that will be lectured to the 12 selected researchers/AA region, that will participate in the 3-day Knowledge Transfer & Innovation capacity building workshops.

Through the completion of this training program, *researchers will be able to direct R&D towards market, industry, private & public investment, de-risking EST development process, making EST more attractive to investment at an early stage of development, hence increasing AA competitiveness*

Module 1 | Soft skills for Scientists

Theme	Duration	Short Description	Contents	Team involved
Science communication for non-academics and digital presence	2h		-Identify the target audience. - Clear language in science communication - Storytelling - Discussion. & ● Designing Strategies for Digital Presence ● Identifying Objectives and Digital Channels ● Creating Engagement through creative content ● Improving Content Quality ● Lead Generation and Networking Measuring Digital Metrics	• Paula Urze (NOVA) • Marisol Castro (CTA) • Aneesh Zutshi (NOVA)
Negotiation skills	1h40	In this module there will be covered negotiation principles and processes, important to the commercialization process of research results.	Negotiation Principles - The nature of Negotiation - Distributive negotiation - Integrative negotiation. Negotiation processes -Perception and cognition	• Paula Urze (NOVA) • Rocío de la Rosa (CTA)

This project has received funding from the European Union's Interreg Atlantic Area programme through the European Regional Development Fund, project code: EAPA_842/2018. This output reflects only the author's view and the European Union cannot be held responsible for any use that may be made of the information contained therein.

			-Communication and emotion -Power and influence Trust and ethics in negotiation	
Ethnographic tools and Empathy	1h	Empathy is an important skill for academic researcher in order to collect market needs and better network with non-academic stakeholders. In this module there will be explored the best practices to apply this mindest, as well as ethnographic tools to put it into practice.	• Empathy mindset • Best practices to apply empathic strategies • Ethnography and its applications in research activities • Ethnography methods and tools for academic researchers	• Ana Sofia Esteves (NOVA) • António Grilo (NOVA)
Creative and critical thinking	1h		Creativity - Concept of Creativity - Phases of Creativity Process - Practices to stimulate creativity Critical thinking • Concept of critical thinking • Phases of Critical Thinking	• Paula Urze (NOVA) • Olga Glumac (SPI)
Collaborative Methodologies for Blue Economy Stakeholder's Engagement & Blue Economy Governance	1h40	The direct involvement of stakeholders has assumed a key role in the context of sustainability and more specifically, in the management of ocean resources. Learnings, capacitation and empowerment achieved through these new forms of expanded engagement, reveal a transformative potential, responding more adequately to the concerns of individuals, organizations and society. Although, considered important in the area of sustainability, its operationalization and requirements to success are still not fully understood. Here, key concepts and factors for		• Lia Vasconcelos (NOVA) • Olga Glumac (SPI)

		success within collaborative methodologies will be presented and discussed, providing the basis and the needed tools and techniques to assure effective stakeholders participation and collective engagement, respecting transparency and inclusiveness in the management of ocean resources.		

Module 2 | Blue economy research planning

Theme	Duration	Short Description	Contents	Team involved
Blue economy policies (local, national, European and international policies)	1h40	Oceans and seas account for 71% of the world's surface and are the world's single largest ecosystem, with a key role in biodiversity and the regulation of global warming. In addition, oceans serve as the world's largest source of protein and support millions of companies and jobs related to marine activities (transport, fisheries, aquaculture, energy production, tourism and leisure, pharmacology and research). This module addresses the environmental, social and economic importance of the oceans and seas and the international, European and national regulations that should be known for a better framework for research in the blue economy.	Maritime Economics: Shipping cycles	• Graça Martinho (NOVA) • Marta Martins (NOVA) • Chia-Hsun Chang (LJMU) - will give a talk regarding the specificities of brexit • CEIMAR OR SGP (To be confirmed)
Sustainability, SDGs and Circular Economy applied to the blue economy	1h40	The blue economy main purpose is to reach a sustainable use of oceans resources. Understand which are the SDGs applied to the blue economy, and which are the methodologies available to plan blue economy activities and measure their sustainability are the goals of this module. Circular economy based methodologies where waste prevention is the ultimate goal will be addressed, including circular design strategies,	The use of Circular Economy principles to promote ports infrastructure securing future and contributing to its sustainability, with a focus on ports degradation (mainly structural and air quality issues) linked to high carbon emission and resilience needs, including a case study where I worked on the reuse of waste to	• Ana Pires (NOVA) • Graça Martinho (NOVA) • Ana Amarda Bras (LJMU) • Pierre Roudaut (TQC) • Arantxa Aguirre (CENTA)

		business models and indicators to measure sustainability.	repair seaports and contribute to decarbonisation	• Ana Carolina Gomes (SPI)
Climate Change and zero carbon footprint in a Sustainable Blue Economy	1h40	The ocean provides oxygen and food to living organisms and control climate and weather patterns. Additionally, it absorbs excess carbon emissions, getting warmer and becoming more acidic in the process. These changes are damaging marine ecosystems, namely shifting the location and size of commercial fish stocks and compromising the ability of the ocean to maintain its role. Thus, Sustainable Blue Economy can play an important part in reducing carbon emissions and promoting adaption to climate change. In this module, the intention is to learn how blue economy products can be developed with a zero carbon footprint and encompass carbon sequestration (mitigate GHG emissions). Ultimately, the goal is to discuss how can blue economy activities get prepared for the pressures caused by climate change and be a solution to mitigate carbon emissions, creating both economic and social benefits.	Risk-based climate adaptation: transport infrastructure cases	• Marta Martins (NOVA) • Ana Pires (NOVA) • Zaili Yang (LJMU) • Eduardo García (CENTA)
Ecosystems based management and blue Infrastructures towards a sustainable local economy	1h40	The central objective of this module is to understand how the paradigm shift provided by the "Working with nature" approach is essential to increase the resilience of coastal communities to climate change and make the blue economy more sustainable.	Seaport adaptation to climate change: a climate resilience risk index	• José Carlos Ferreira (NOVA) • Ching Pong Poo (LJMU)

		This module aims to provide the most recent foundations and basic concepts and to present the most innovative strategies, techniques and methods related to the approach of ecological-based management and ecosystem services provided by green and blue infrastructures, essential for the change towards decarbonization of the economy and better social equity. The use of ecosystems and nature-based solutions is brought up in the UN Sustainable Development Goals (Agenda 2030), and in Europeans strategic policy documents such as EU Territorial Agenda 2030, EU Strategy on Green Infrastructure, EU Strategy on Green Infrastructure, EU Blue Growth Strategy, EU Coastal and Marine Policy and EU strategy on adaptation to climate change, as a way to address climate change adaptation, ecosystems based management and blue infrastructures in ocean and coastal areas		• Isabel Martin (CENTA)
Ocean Literacy for blue sustainable community- based development	1h40	Ocean literacy module aims to demonstrate the contributions of ocean literacy to marine and coastal biodiversity protection, by promoting coastal and oceanic resources conservation and natural and cultural values preservation in the Atlantic coast. This module targets the achievement of the UN Sustainable Development Goals and Agenda 2030, by promoting the preservation and conservation of natural resources. Besides that also encourages improvements in society		• José Carlos Ferreira (NOVA) • Lia Vasconcelos (NOVA) • CEIMAR • CENTA & Lia Vasconcelos

		regarding marine and coastal biodiversity literacy, as well as promoting the preservation of local traditions related to the sea, namely traditional fishing techniques and the cultural aspects of this ancient activity. This module aims to provide the most recent foundations and basic concepts and to present the most innovative strategies, techniques and methods related to the ocean and coastal literacy approach, in order to integrate local natural and cultural resources, essential for blue sustainable community-based development.		
Ethics	40min	The main purpose is to understand if the project proposal must have in consideration any Ethical issue. The Ethics Appraisal Procedure concerns all activities funded by public funds and includes the Ethics Review Procedure. When preparing a proposal, it is required to conduct an Ethics Self-assessment starting with the completion of an Ethics Issues Table.	• To understand the ethical procedure • Overview of the entire project cycle • What points must be considered • ETHICS APPRAISAL STEPS • Ethics Self-assessment à Application phase Consideration of ethical issues of the proposal • Ethics • Pre-screening/Screening Ethics experts and/or qualified staff Evaluation phase Review of application material • Ethics Assessment	• Juliana Monteiro (NOVA)

			• (for proposals involving hESC or raising serious ethical issues: severe intervention on humans) Ethics experts Evaluation/ • Grant preparation phase Review of application material Ethics Check/Audit Ethics experts Implementation phase Review of project deliverables/interview with applicants	
Scenario Planning	2h	Using a strategic planning method to make flexible long-term plans	• Basic Concepts in Scenario Planning • Processes of Scenario Planning • Advantages and Limitations of Scenario Planning	• João Fernandes (NOVA) • Pierre Roudaut • Rocío de la Rosa (CTA)
Systems thinking & exponentiality	2h	Expanding cognitive horizons through Thinking Tools. This course is intended to provide thinking tools that goes beyond what we are used to do in our underlying disciplines and research fields. Especially, when those tools are connected with the analysis of complex systems, we usually called this field as System Thinking. It is a way to analyze complex and connective problems, to analyze and study systems with are more complex(more dense, crowded, interconnected)	• Systems Thinking ○ Why Use Systems Thinking? ○ What Does Systems Thinking Involve? ○ When Should We Use Systems Thinking? • Exponentiality ○ Exponential Organizations ○ The Abundance Concept	• João Fernandes (NOVA) • José Silva Lopes (NOVA) • Pierre Roudaut

		than we are expecting them to be at first hand since we are usually taught to analyze, to use our rational and cognitive abilities in defining direct paths from cause to effect and to look at things in small and understandable parts, this "way of thinking" provides a different and more extensive to look ("the more ways of seeing , the better") for the system structure and behaviour and then to promote solutions and guidelines to create system redesign. The whole course is then focused in understanding what we mean by a system, the behaviour of a system, and the structure of a system. This being : the definition of a system and a dissection of its parts; how those parts are back together to show how they interconnect; showing and presenting a collection of common and interesting types of systems; why and how systems work and why they so often surprise and confound us both positively or negatively; why things so often happen much faster or slower (or even not working at all) than we expected; why a system might suddenly, and without warning, jump into a kind of behaviour we've never seen before or predicted. These system thinking tools permit to study and analyze the relationship between structure and behaviour so that we can understand how systems work, what makes them produce poor results, and how to shift them into better behaviour patterns. After introducing those tools, we may use systems thinking to create	(alternative or complementary contents to explore according time available) ● Principles and Mindset in Systems Thinking ● System Structure (Parts, Wholes, Boundaries, Hierarchy, Inputs, Outputs and Transformations) ● System Behaviour (Functions, Relationships, Process and Dynamics, Patterns and Inference, Control) ● Diagrams for Systems Thinking (time-dependent representations, causal loops, stock and flow, graphs and networks) ● Introduction to Systems and Models (equations, state-space, agent-based, stochastic, risk assessment) ● Frameworks vs Models ● Chaos in Systems ● Complexity and Scale in Organizations ● Exponential Growth and Limits to Growth	

		change in systems, policy and society in solving complex problems.	• Adaptation, Evolution, Competition and Cooperation	
Reverse Engineering Thinking and Technology Design	2h	The main purpose of this teaching course is to provide a technology design methodology under a "looking backwards" approach with the purpose on making the process of developing a technology (product, process, service, technique, etc.) more effective, more sustainable and less problematic (in order to prevent/forecast hurdles, miscues, backstops, delays or even radically avoid re-design of the initial technology at a later stage). This methodology looks at the final technology application and is oriented backwards with a detailed analysis of all the stages of the development in terms of feasibility,feedstock constraints,components integration and selection, sustainability strategy for inputs and outputs, manufacturing possibilities and environments and eventual technical readjustments or re-orientations. The teaching delivery method is based on 1h of lecture time and 2h in an active-learning environment (case studies or project-based problems introduced to the students). Learning outcomes: ability to learn and use a methodology for technology design under a "reverse engineering thinking" approach; ability to define a technology development process under specific remanufacture goals and objectives; ability to find and predict technological feasibility	-"Reverse engineering" Thinking and Strategies; - Introducing a few Design tools : Axiomatic Design, Concept Selection, Failure Mode Evaluation Analysis, Cause and Effect Diagram, Design for Environment -Technology Characteristics and how to look for its feasibility hurdles; -Manufacturing Processes and Technology Development concepts; -Remanufacture Engineering Introduction; -Methodology for Technology Design based on a Reverse Engineering Thinking Approach;	• José Silva Lopes (NOVA) • CEIMAR

		obstacles and difficulties and determine what steps should be planned previously in terms of R & D needs or other technical approaches; use of tools such as Axiomatic Design,Concept Selection, FMEA and others for design purposes.	-Application of the methodology to case studies or specific problems.	

Module 3 | Research impact

Theme	Duration	Short Description	Contents	Team involved
Intellectual Property basics	2h		● Difference between Intellectual Property & Intellectual Property Rights ● The importance of the Intellectual Property System for innovation ● Main principles of Intellectual Property Rights (Territoriality, duration of protection, rights conferred, public disclosure) ● Different types of Intellectual Property according to EU law(Copyright, Trade Marks and Logos, Patents and utility models, Trade secrets) ● What is an invention, what can and cannot be patented in light of EU Law ● The three requisites for patenting: novelty, inventive step and industrial application ● How do patent documents look like ● Specific types of patents: Biotechnology Patents and Inventions Implemented by Computer ● Basic on the process of patenting and associated costs	• Marta Cerejo (NOVA) • Alison Hardy (LJMU) • Lucía Díaz Martín (AAC)

Technology Transfer in practice	2h	This course is intended to provide a operational view of the University Technology Transfer Processes, from invention to reduction to practice and also introducing concepts related with the Open Innovation framework philosophy and how to integrate it with the value creation mission of Academia. Learning outcomes: ability to understand general concepts and processes about Technology Transfer from the Academia to the industry; understanding of Technology Transfer models ability to use Open Innovation framework for value creation based on a collaborative view; ability to understand on how to do an efficient management of IP rights; ability to understand the need for Non-Disclosure and Material Transfer Agreements; understanding the differences between Licensing and Assignment of IP; understanding the several types of Partnerships and Collaborations between Academia and Industry and what are the more common contract arrangements;use of Technology Transfer Potential Evaluation Criteria to determine if a	● Basic Concepts: what is commercialization and knowledge Transfer ● The difference between invention and innovation ● Innovation (incremental vs radical; Closed vs open innovation ● Open innovation as an opportunity for Academia ● IP management at academia – from the idea to innovation ● Universities IP Policy ● Do's and don'ts to safeguard novelty ● How to transfer knowledge – the different types of KT contracts and when to use them ● Models of Technology Transfer: Linear, Non-Linear and Hybrid Models; ● Current Trends in Technology Transfer ● Technology Transfer Potential Evaluation Criteria	● Marta Cerejo (NOVA) ● José Silva Lopes (NOVA) ● Pierre Roudaut ● CEIMAR

		R & D project is potentially transferable to the society		
Identification of Market applications	2h		● Customer development and product development ● Product fit and Market fit: validation strategies ● Marketing – market segmentation and classification ● Value proposition ● Market study	● Marta Cerejo (NOVA) ● Ana Sofia Esteves (NOVA) ● Pierre Roudaut ● Juan Carlos Moreno (CTA) ● Francisco Rocha (SPI) ● Aodán MacDonnachadha (Udarás)
Strategic Intelligence	1h40		● The importance of patent database search ● Basics of Patent database search ● Type of information that can be retrieved from Patent documents important for your research strategy	● Marta Cerejo (NOVA) ● Ana Sofia Esteves (NOVA) ● CEIMAR ● Aodán MacDonnachadha (Udarás)

Module 4 | Research Funding

Theme	Duration	Short Description	Contents	Team involved
Corporate finance basics and Triple Bottom line (TBL) and Environmental, Social and Governance (ESG)	1h40	Understanding the financial activities of a corporation Questioning, why are Corporations and Business of such a great importance for KT & Innovation	• Private vs Public vs Corporate Finance • Basic Principles of Corporate Finance • Basic Concepts of Corporate Finance • TBL – Triple Bottom Line or the importance of corporations and business to focus on social and environmental impact just as they do on profits • ESG - Environmental, Social and Governance as fundamental criteria on business and corporation's assessment	• João Fernandes (NOVA) • Christos Kontovas (LJMU) • Eva Mena (CEIMAR)
Public and Private Funding	2h	Addressing funding needs	• Differences between Public and Private Funding • Advantages and disadvantages of Public Funding • Advantages and disadvantages of Private Funding • Sources of Public and Private Funding	• Juliana Monteiro (NOVA) • João Fernandes (NOVA) • Macarena Ureña (CTA) • Ana Pinto (SPI)

			• The requirements of public versus private funding • To understand the timings of private and public funding	
Financial model and Decision tree	2h			• Sara Reis (FIP) • Neil Crabb (FIP)