



Code	Title
1.1	Financial Models for Renewable Energy
ECTS/Credits	Language
3 ECTS	English

<i>Specific teaching Objectives of the course/Learning outcomes (Dublin Descriptors)</i>
<i>a. Knowledge and Understanding</i>
The main objective of the course is to enhance students' understanding of the concepts of the business financial models in energy with a focus on both non-renewable and renewable energy business models as well financing models.
<i>b. Applying knowledge and understanding</i>
After attending the course, students will have the ability to deal with viable business and financing models for their own businesses as well as supporting the design and implementation of renewable energy projects both theoretically and empirically. They will have a deeper understanding of how energy markets function.
<i>c. Making Judgements</i>
Students will have the critical curiosity of reading real economic phenomena and economic models in a green inclusive perspective, having increased their knowledge on energy financing. Students will be also able to choose appropriate business and financing models for renewable energy businesses/projects.
<i>d. Communication skills</i>
Students, through discussions, presentations, exercises and projects, will acquire tools for critical analysis of empirical evidence and communication skills. They will also learn how to structure and present their own ideas in class discussions, presentations and project work. Further students will explore the latest methods and approaches for doing empirical research in renewable energy financing.
<i>e. Learning skills</i>
Students will have a comprehensive understanding of financial analysis and modelling of resources that will allow them to tackle other resources analysis. They will be able to use finance techniques and models to make energy finance/investment decision as well as the risks for the financial system, investors and financial markets.



<i>Main topics</i>			
	Estimated number of hours		
	Lectures	Laboratory	Tutorial
A Introduction to Business Models			
1. Origin and relevance of the concept of the business model			
2. Structure of value creation in business models			
B- Business Model Innovation and Sustainable Business Model			
1. Drivers and process of business model innovation			
2. Applications of Business models and innovations			
C- Business models for Renewable Energy			
1. Introduction to Renewable Energy			
2. Taxonomy of Green Business Models			
3. Prepaid and power purchase agreements (PPA), renewable energy certificates (RECs) and the implication on funding			
D- Operational costs for Renewable Energy			
1. Fixed and variable costs typical of renewable energy projects			
2. Financial modelling techniques for operational costs and project maintenance			
E-Pricing			
1. Pricing mechanisms applied to energy and renewable energy			
2. Purchase agreements and fee-in tariff auctions			
3. Risks of pricing			
F- Economics of Energy Storage			
1. Introduction (Definitions of concepts)			
2. Energy storage needs and solution			
3. Policy and market limits			
G- The Carbon Credit Financing model			
1. Definition and background			
2. Credits vs taxes			
3. Carbon Markets (Auditing, reporting, supply chains, validation and risks)			
4. Optimal carbon pricing? Carbon tax system and the use of carbon revenues.			
H- Community Based Renewable Energy Models			
1. Business / market framework			
2. Community-based renewable energy examples in emerging markets			
I- Crowdfunding Model for Green Energy Investment			



3. History and Market Outlook of Crowd-funding for Energy Access			
4. Cases and Experiences			
L - The Public Private Partnerships Model of Renewable Energy			
1. Obstacles in developing renewable energy projects under PPP schemes			
2. Best practises			
Laboratory			
Develop product prototypes/ simulations and understand the Value proposition and how to commercialise it			

<i>Course description</i>
<p>The main objective of the course is to give students a knowledge about new and innovative business models for renewable energy. The course mainly explains the business model innovations, their applications and how they can be designed as well as redesigned. Evolving business models for RE in terms of revenue models (pricing of renewable energy power under various frameworks including fee-in tariffs and auctions), operational costs (fixed, variable, working capital) and other sources of income (carbon credits, tax credits) will be explained. At the end of the course, students will be familiar with the definition of business models in economics and business, new business models in green energy markets, the certifications of energy generation (green power labels), the concept of consumer preferences for RE and distribution of RE products.</p>

