F. ANNEXES

ANNEX 1 – LIST OF COMPULSORY COURSES AND ELECTIVE COURSES

ANNEX 2 – COURSE DESCRIPTION

Course Title	**THE WORLD IN 2030: Energy, Technology, History and Environment**				
Course Code	PHY 013				
Course Type	ELECTIVE COURSE				
Level	Undergraduate				
Year / Semester	2nd Semester				
Teacher's Name	Constantinos Christofides				
ECTS	6	Lectures / week	2 x 2 Hours	Laboratories / week	
Course Purpose and Objectives	The aim of the course is to bring students from all faculties (except The Faculty of Pure and Applied Sciences and the Faculty of Engineering) in contact with a broad range of concepts related to energy and its history through the centuries as well as current developments. Particular attention is given to applications of these concepts in everyday life. The course also includes an overview of how modern technologies are changing the world. The main actors of energy economics as well as the pioneers in energy technology are discussed. An assessment of the expected technological and energy changes of the next decade is also made. Students will learn how energy changes the environment and its role in climate change. Some basic principles are provided for the understanding of technical and economic studies for the selection of green investments. Successful course attendance does not require a strong background in Physics or Mathematics.				
Learning Outcomes	Upon successful completion of the course, students will know: • The history and evolution of energy technology • The importance of green development • Energy vocabulary and terms • Which are the renewable energy sources (RES) • The great prospects of solar energy in earth & space. • The dilemma between conventional and RES • The relationship between air pollution and conventional energy • The greenhouse effect and what needs to be done • The electric car and the geopolitical equilibrium • The future of photovoltaics in aeronautics. • The future of hydrogen in transport (shipping and cars) • How can the world be in the post-oil era? • The impact of supercomputers and nanotechnology on energy				

	• Antarctica's unknown role in climate change • A global picture of the energy situation in Cyprus Students will be able to apply and present their knowledge of energy issues. They will also have the knowledge to analyse and calculate at a basic level the sustainability of green investments in relation to conventional ones.		
Prerequisites	---	Required	---
Course Content	A brief look at the history of energy and technology from antiquity, the Middle Ages, the Industrial Revolution, the 20th century, today and tomorrow. The prospects of Renewable Energy Sources and the deadlocks of conventional forms of energy. How changes in energy technologies affect history, geography, economics, politics and geopolitics. The timeless importance of solar architecture. The big futuristic technological plans, their importance for the environment and the climate crisis. Antarctica as the cuisine of the global climate but also as a place of cooperation and confrontation. Study cases and technico-economic analyses for green investments. The dimension of Cyprus and the Eastern Mediterranean will be discussed almost in all chapters.		
Teaching Methodology	Each Chapter has a duration of 1-2 weeks. Each week includes two lectures of 120 minutes where a variety of examples and study cases will be given. Discussion during the lectures is welcome. PowerPoint files, short films and various articles from popular scientific journals are used for lectures.		
Bibliography	A selected scientific article will be given for each chapter. Energy Demand & Climate Change, Issues and Resolutions, Franklin Hadley Cocks, Wiley, 2009. Godfrey Boyle, Renewable Energy, Power for a Sustainable Future, The Open University, Oxford, 2004. Κ. Παππά, Επιστήμη και Τεχνολογία (Η Ηλεκτρική Ενέργεια από Τον Ηλιο), Τεύχος 9 (1994) Συνοπτικό Ιστορικό των Ελληνικών Σιδηρόδρομων (Αθήνα 1984). Η.Γ. Τσελεπίδης και Ι.Δ. Καραλής, Φυσική Περιβάλλοντος και Ηπιες Μορφές Ενέργειας, Αθήνα (1989). C. Christofides, Autonomous Photovoltaic Power System or Connection With Electrical Grids? A Preliminary Feasibility Study for Small and Isolated Communities. Solar Cells, 26, 165-175 (1989). Lost in the National Labyrinths of Bureaucracy: The Case of Renewable Energy Governance in Cyprus, Paris A. Fokaides, Andreas Poullikkas, Constantinos Christofides, Lecture Notes in Energy 57, Evanthie Michalena and Jeremy Maxwell Hills, Editors, Renewable Energy Governance Complexities and Challenges, Springer 2013.		

	Η Ενεργειακή Μετάβαση της Κύπρου στην Οικονομία του Υδρογόνου, Ανδρέας Πουλλικκάς, 2020 - Energy_Strategy.pdf.
Assessment	The evaluation is done with an intermediate test "Δ" and a final exam "E". The test Δ contains multiple choice questions on the already covered syllabus (about 50%) already taught. The final exam E contain multiple-choice questions on the total syllabus. The questions and problems are related to the lectures but there will also be some critical thinking questions. The tests will be delivered online in computer labs so that the results will be available to the students immediately after the end of the exam. The Final Grade "TB" will be given by the relationship: $$\boldsymbol{TB = 0.6E + 0.4\Delta}$$
Language	Greek

ANNEX 3 – DETAILED BIOGRAPHICAL NOTES

ANNEX 4 – INFRASTRUCTURE