Course Title	Renewable Energy Technology				
Course Code	**MMK 516**				
Course Type	ELECTIVE				
Level	MASTER/PHD				
Year / Semester	WINTER SEMESTER				
Teacher's Name	DEMOKRATIS GRIGORIADES				
ECTS	8	Lectures / week	2 X 1,5 AN HOUR	Laboratories / week	NO
Course Purpose and Objectives	The purpose of the course is the understanding of renewable energy technology, the analysis and solution of pertinent problems and the analysis and design of power conversion systems.				
Learning Outcomes	The students will be able to: • identify different modes of energy conversion and explain the difference between conventional and renewable energy conversion mechanisms, • identify, classify and estimate the potential of different renewable energy resources, • analyse, and report and apply the curves of performance of solar, wind and hydroelectric systems and • design, plan and inspect renewable and hybrid power systems to meet specific power needs				
Prerequisites	NO	Required	NO		
Course Content	The course content includes the energy problem and Renewable Energy Sources (RES) - Historical development of energy technologies & current status: energy sources and energy consumption (worldwide, Europe, Cyprus) - Towards a sustainable energy future - The development of renewable energy in Europe and the world - RES in Cyprus - Short and long term prospects of RES (world, Europe, Cyprus) - Methods of analysis and prolexis: Wind potential - Solar radiation - Biomass - Hydroelectric resources - Sea waves / ocean currents - Wind - Passive & Active solar systems - bioclimatic architecture - Photovoltaics - Small hydroelectric - Geothermal Energy - Hydrogen - fuel Cells				
Teaching Methodology	Lectures 3 hours per week / Tutorials or laboratory exercises 1 hour per week Teaching is supported by academic lectures, and demonstration of laboratory exercises. For a correct and complete understanding of the subject matter it is necessary to attend the lectures and laboratory exercises as well as the solution of the exercises / tasks that are assigned. The teacher does not exclusively use a single book and the lectures are based on the notes and the bibliography given below. All course material (lecture notes, exercises, laboratory exercises, etc.) are posted on the web site of the course in Blackboard. During the semester, additional auxiliary / reading material is posted to BlackBoard if this is necessary.				

Bibliography	1. Gilbert M. Masters “Renewable and Efficient Electric Power Systems”, ISBN 0-471-28060-7, John Wiley & Sons, (2004). 2. Sørensen Bent, *Renewable Energy*, Second Edition, Academic Press, ISBN 0-12-656150-8, (2004). 3. Sørensen Bent et al., *Renewable Energy Focus Handbook*, Academic Press, ISBN: 978-0-12-374705-1 (2009). 4. Markvart Tomas, *Solar Electricity*, John Wiley and Sons, ISBN 047-1941-61-1, (1995). 5. Stiebler Manfred, *Wind Energy Systems for Electric Power Generation* Springer Series in Green Energy and Technology, ISBN: 978-3-540-68762-7, e-ISBN: 978-3-540-68765-8 (2008). 6. Μοσχάτος Ανδρέας Ε., *Ηλιακή ενέργεια*, έκδοση τεχνικού επιμελητηρίου Ελλάδος, ISBN 960-7018-26-5 (1992). 7. Decher Reiner, *Direct Energy Conversion: Fundamentals of Electric Power Production*, Oxford University press, ISBN-10: 0195095723 (1996). 8. Yogi D. Goswami & Frank Kreith, “Energy Conversion” (Mechanical Engineering Series), CRC Press. 9. Archie W. Culp, *Principles of Energy Conversion*, Mcgraw-Hill.
Assessment	One midterm exam (40%), assignment & presentation (50%)
Language	GREEK OR ENGLISH