

Course Unit Title	SES 512 Renewable Energy I
Programme of study	MSc in Sustainable Energy Systems (Distance Learning)
Lecturer	Dr.-Ing. Paris A. Fokaides
Type of course unit	Compulsory
ECTS	5
Year of study:	1
Semester(s) offered	Fall Semester 2015, 2017, 2019
Course content	<ul style="list-style-type: none"> ▪ Theory and practice of renewable energy technologies ▪ Renewable energy potential analysis ▪ Technical, environmental and economic considerations of renewable energy technologies applications ▪ Pre-engineering of renewable energy technologies applications
Course modules:	<p><u>Module 1: Energy conversion principles in renewable energy sources</u></p> <ul style="list-style-type: none"> ▪ Fundamentals of renewable energy applications ▪ Different options from renewable heat and power ▪ Classification of energy carriers according to degree of conversion ▪ Technical key figures of renewables <p><u>Module 2: Solar energy utilization</u></p> <ul style="list-style-type: none"> ▪ Solar thermal utilization principles ▪ Technical economic and environmental assessment of solar thermal technologies ▪ Solar thermal power production ▪ Solar driven electrochemical effects ▪ Photovoltaics technical, economic and environmental assessment <p><u>Module 3: Wind energy utilization</u></p> <ul style="list-style-type: none"> ▪ Wind kinetic energy utilization principles ▪ Technical, environmental and economic aspects ▪ Different types of wind energy converters <p><u>Module 4: Biomass and biofuels</u></p> <ul style="list-style-type: none"> ▪ Biomass sources and biomass potential ▪ Thermochemical and biochemical biomass to biofuel conversion routes ▪ Biofuels utilization ▪ Biofuels environmental assessment and supply chain considerations <p><u>Module 5: Geothermal energy utilization</u></p> <ul style="list-style-type: none"> ▪ Geothermal utilization principles ▪ Technical, environmental and economic assessment aspects of geothermal applications ▪ Comparative assessment of different types of geothermal applications
Textbooks:	Kaltschmitt, M., Streicher, W., & Wiese, A. (Eds.). (2007). Renewable energy: technology, economics and environment. Springer Science & Business Media. 070 947 3
Instruction language	English
External reference	link