Course Unit Title	**CESU 420 Structural aspects in renewable energy applications**
Programme of study	BSc in Civil Engineering
Lecturer	Dr.-Ing. Paris A. Fokaides
Type of course unit	Compulsory (for Sustainable Construction Stream)
ECTS	5
Year of study:	3
Semester(s) offered	Fall Semester 2014
Course content	▪ Basic concepts of renewable energy sources applications ▪ Large structures deemed necessary for the proper operation of renewable energy sources power plants ▪ Structures related to on ground, coastal and underground renewable energy technologies applications
Course modules:	Module 1: Renewable energy technologies fundamentals ▪ Renewable energy technologies fundamentals ▪ Classification of renewable energy technologies ▪ National action plan for the penetration of renewable energy technologies in national energy mixture ▪ Licensing procedure for renewable energy projects Module 2: On ground renewable energy structures ▪ Structural Design of PV farm ▪ Structural Design of Wind Farm ▪ Structural Design of Biogas Reactor (anaerobic digester) Module 3: Coastal renewable energy structures ▪ Tidal generator, Concept and basic prototypes ▪ Off shore wind tower, bottom-mounted axial turbine, cable tethered turbine Module 4: Underground renewable energy structures ▪ Drilling equipment, methods and technology, advanced drilling techniques, design of wells and casing programs, cementing techniques. ▪ Borehole geology and stratigraphy interpretation of drill cuttings and cores ▪ Cleaning and repair of production wells, well maintenance. ▪ Stress orientation and characterization, hydraulic fracturing.
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