



UNIVERSITY OF  
APPLIED SCIENCES IN NYSA



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## TITLE OF THE COURSE

*Sustainable Energy Management*

## COURSE DESCRIPTION

The industrial revolution that took place at the end of the 19th century began very intensive technical development based on new discoveries and inventions. In the following decades, the emergence of new technologies, machines and devices supported by IT techniques accelerated this development, and with it the demand for energy and raw materials necessary for its production increased. Over time, awareness of the danger of changes in the natural environment resulting from intensive exploration of natural resources and the effects of industrial activity has also increased. The idea of sustainable development is becoming one of the most important goals that give hope for the protection of natural resources while maintaining the opportunity for further technical progress and human development. The aim of the course is to discuss the basic goals of sustainable development with particular emphasis on the use of renewable sources to produce green energy. The course will discuss types of renewable sources and technologies for generating energy from these sources. Participants will learn the theoretical and practical basics of green energy production. Issues related to energy consumption of processes and energy storage as important elements of energy management in enterprises will be discussed.

The classes will include experimental exercises and participants will be able to independently build systems that generate electricity from renewable sources

## HOST PROFESSORS

### **dr inż. Piotr Chwastyk, University of Applied Sciences in Nysa**

Lecturer at the Faculty of Technical Sciences of the UAS in Nysa, conducts classes in the field of management and production engineering in the scope of planning, organization, and control of production processes. His research interests include design using CAD/CAM systems, modeling production processes, utilizing unmanned aerial vehicles in production engineering, renewable energy, and cleaner production.

### **Bukurije HOXHA, Dr., assistant professor, University of Prishtina**

Lecturer at the Faculty of Mechanical Engineering of the University of Prishtina. Bukurije Hoxha has finished her Bachelor, Master and PhD studies on Renewable Energy Sources. She has been involved in different international projects developed in Kosovo and abroad. She has published numerous studies in well-known databases with an impact factor. She has worked on numerous feasibility projects in the field of wind energy. She has participated in numerous local and international conferences as session leader and similar. She is a member of the Association of Women in the Energy Sector in Kosovo, AWESK, where she was part of the different projects carried out by this association.



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International  
**Summer  
Programme**  
UAS Nysa 2025



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### Course Level

Mixed-level: Suitable for students from various disciplines, including engineering, production engineering and architecture

**Language of Instruction:** English

**Duration:** June 30 – July 11, 2025

**Working Time (Lesson Hours – 45 min/day):** 4 hours per day

**Number of ECTS Credits:** 4

**Teaching Method:** Lectures, case studies, creative workshops and final project presentations.

### COURSE OBJECTIVES

This course will be particularly relevant for students who:

1. Have a passion for environmental protection and are interested in ecological issues and want to contribute to reducing greenhouse gas emissions and conserving natural resources.
2. Are interested in modern technologies and want to learn about the latest technologies related to renewable energy, such as solar, wind, geothermal, biomass, and energy storage technologies.
3. Want to understand the economic aspects of energy and want to understand the costs, benefits, and financing models of projects related to renewable energy and energy efficiency.
4. Are interested in energy policy and want to explore how energy policies are shaped, what legal regulations are in place, and how they can support the development of sustainable energy systems.
5. Want to participate in the energy transition and desire to actively participate in the transition from traditional energy sources to more sustainable solutions, contributing to the creation of greener and more sustainable communities.
6. Seek an interdisciplinary approach that combines various fields of knowledge, such as technology, economics, policy, ecology, and management, to comprehensively address issues related to energy management.
7. Plan a career in the energy sector and want to acquire the skills and knowledge needed to work in the energy sector, whether as an engineer, analyst, policy advisor, or project manager.

Such a course will attract students who want to contribute to building a future based on sustainable energy sources, both through technical innovations and through changes in policy and management.

### COURSE CONTENT

1. Sustainable development - goals and importance for the development of humanity and the protection of the natural environment
2. Non-renewable sources in energy production - advantages, disadvantages and impact on the natural environment
3. Renewable sources: water, wind, sun, geothermal, biomass
4. Technologies for generating energy from renewable sources
  - Water - hydroelectric power plants



- Wind - wind turbines, developing stages of wind farm
  - Sun - photovoltaics
  - Hydrogen - hydrogen cells
5. Energy storage
  6. Energy consumption - ways to reduce energy demand

#### **VERIFICATION OF LEARNING OUTCOMES**

- Class Attendance and Active Participation: 20%
- Workshop Performance and Group Exercises: 40%
- Final Project Presentation: 40%

#### **PREREQUISITES**

- Proficiency in English (B2 or higher)
- No prior knowledge of sustainable energy sources is required, although an interest in the topic and the opportunities that renewable energy sources offer us is recommended

#### **SUGGESTED LITERATURE**

1. Everett, Bob; Peake, Stephen and Warren, James eds. (2021). Energy Systems and Sustainability: Power for a Sustainable Future (3rd ed.). Oxford, UK: Oxford University Press.
2. Da Rosa, A. V., & Ordóñez, J. C. (2021). Fundamentals of renewable energy processes. Academic Press.
3. Randolph, J., & Masters, G. M. (2008). Energy for sustainability: Technology, planning, policy. Island Press.
4. Peake, S. (2018). Renewable energy-power for a sustainable future (No. Ed. 4). Oxford University Press.
5. Peake, S. (2018). Renewable energy-power for a sustainable future (No. Ed. 4). Oxford University Press.