



NUCLEAR SYNERGY WITH COAL AND CHEMICAL PROCSSING

3 ECTS (ELECTIVE)

AGH University of Science and Technology

Course responsible: Dr. habil. Jerzy Cetnar

Course overview

The aim of the course is to provide the students with the basics understanding of physics and techniques applied in nuclear reactors. Following the basic understanding students will learn of selected nuclear reactor types, their constructions, safety and functions as sources of power and heat thus will gain knowledge of the concept of nuclear cogeneration dedicated for heat application in chemical processing, coal processing and synthetic fuel production and means of systems integration.

The course consists of lectures and seminars.

Lectures will provide the required knowledge and guidance for self-studies, organised in three groups: 1. Nuclear specific issues; 2. Chemical specific issues; 3. Integration issues

Seminars: Students will be given selected topics specific to nuclear cogeneration development based on completed and ongoing programs in order to enhanced acquired knowledge and for detailed discussion

Outcome of the course

After this course the student should be able to

On completing this course, you should be able to:

- understand the basic aspects of nuclear reactor function that might be required from chemical engineers for related R&D programs or future industrial application nuclear synergy systems;
- recognise possible primary interaction between nuclear and chemical components of the integrated system and identify safety issues a particular system integration involves;
- assess benefits from nuclear synergy introduction to chemical process in terms of CO₂ emission reduction and increased effectiveness of resources utilization;
- analyse various technological and economical aspects of selected cogeneration systems with major focus on clean coal systems;
- identify areas of technology developments required for realization of an effective nuclear synergy systems

Course coordinator & teachers

Dr. habil. Jerzy Cetnar, Faculty of Energy and Fuels, AGH, E-MAIL: cetnar@ftj.agh.edu.pl