



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Process flow diagrams [N2EPI01-TGiEO>SP]

### Course

Field of study

Industrial and Renewable Energy Systems

Year/Semester

1/2

Area of study (specialization)

Gas Technology and Renewable Energy

Profile of study

general academic

Level of study

second-cycle

Course offered in

Polish

Form of study

part-time

Requirements

compulsory

### Number of hours

Lecture

9

Laboratory classes

0

Other

0

Tutorials

0

Projects/seminars

9

### Number of credit points

2,00

### Coordinators

dr inż. Łukasz Semkło

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### Lecturers

### Prerequisites

Has expanded knowledge about the development directions of energy technologies and renewable energy sources. Is able to critically analyze the functioning of existing technical solutions in the energy industry and evaluate these solutions. He is ready to fulfill social obligations, inspire and organize activities for the social environment.

### Course objective

Getting to know technological diagrams. Understanding the markings found in Polish Standards.

### Course-related learning outcomes

Knowledge:

1. knows the main directions of development of the energy industry, taking into account economic and environmental requirements, and can read the design solutions of energy installations using diagrams, [p7s\_wk, ec2a\_w03]
2. has knowledge about the negative impact of energy technologies on the natural environment and can present such schematic threats [p7s\_wk, ec2a\_w10]
3. has knowledge of structures and processes for managing energy companies and can present

them using diagrams [p7s\_wk, ec2\_w14]

#### Skills:

1. is able to critically analyze the functioning of existing technical solutions in the energy industry and evaluate these solutions based on process diagrams [p7s\_uk, e2a\_u11]
2. is able to solve research and engineering tasks requiring the use of process diagrams based on polish standards and using experience gained in an environment professionally involved in engineering activities [p7s\_uk, e2a\_u13]
3. is able to use the experience gained in the environment of professionally engaged in engineering activities related to the creation and reading of industrial and renewable energy process diagrams [p7s\_uk, e2a\_u14]]

#### Social competences:

1. is ready to recognize the importance of knowledge in solving cognitive and practical problems when creating process diagrams and seeking expert opinions in the event of difficulties in solving the problem independently [p7s\_ko, e2a\_k02]
2. is ready to think and act in an entrepreneurial manner by creating process diagrams [p7s\_ko, e2a\_k05]
3. by creating process diagrams, he is ready to perform responsible professional roles, taking into account changing social needs, including:
  - developing professional achievements,
  - maintaining the ethos of the profession,
  - compliance with and development of the principles of professional ethics and actions to comply with these principles [p7s\_ko, e2a\_k06]

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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Lecture - written exam. Obtaining credit from a minimum of 51% of the points possible to get. There is a possibility of an oral question to raise the grade.

Project - in order to complete the project, the lecturer should complete the project and answer the questions asked for the project.

### Programme content

Construction and meaning of individual elements of technological schemes. Familiarization with Polish standards in the field of signs and symbols used in the technique. The lecture will be conducted using a multimedia presentation. Design classes will be held at the blackboard (chalk or white).

### Course topics

Construction and meaning of individual elements of technological schemes. Familiarization with Polish standards in the field of signs and symbols used in the technique. The lecture will be conducted using a multimedia presentation. Design classes will be held at the blackboard (chalk or white).

### Teaching methods

Informative (conventional) lecture (transfer of information in a systematic way) - can be of course (propedeutical) or monographic (specialist) Problem lecture ("internal dialogue" of the lecturer with the student: understanding the problem, gathering premises, solving it) Conversational lecture ("external dialogue" of the lecturer with the student; students participate in solving the problem) - the continuation of the lecture may be a seminar Project method (individual or team implementation of a large, multi-stage cognitive or practical task, which results in the creation of a work)

### Bibliography

Basic

1. Polish Standards

Additional

1. Trade magazines

## Breakdown of average student's workload

	Hours	ECTS
Total workload	60	2,00
Classes requiring direct contact with the teacher	21	0,70
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	39	1,30