**Learning outcomes - ADD_ON_SKILLS SUMMER SCHOOL (ADD)**

**Form: hybrid summer course**

| Symbol | Learning outcomes |
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| Knowledge: knows and understands | |
| K_ADD_K01 | standards, rules, and guidelines for the design of building structures and their elements |
| K_ADD_K02 | principles of formulating and solving complex problems related to systems, their reliability and safety |
| K_ADD_K03 | construction, principles of operation and exploitation of modern devices used in refrigeration, heating, ventilation, air conditioning and lighting |
| K_ADD_K04 | methods and tools, including advanced information and communication techniques, along with computational and statistical methods |
| K_ADD_K05 | selected issues in the field of detailed knowledge - necessary to understand the thermal, flow, cooling, ventilation, and air conditioning processes occurring in environmental engineering |
| K_ADD_K06 | the latest development trends and technologies in engineering |
| K_ADD_K07 | the object, parametric modeling techniques, BIM standards and how to apply rational workflow design in 2D and 3D objects using IT systems. |
| K_ADD_K08 | legal, economic, and institutional conditions for the functioning of entities related to environmental engineering |
| K_ADD_K09 | contemporary trends in construction technologies and their impact on the architectural form of buildings |
| K_ADD_K10 | influence of climatic conditions on the technical conditions of shaping the architecture of the building |
| K_ADD_K11 | modern solutions and construction materials used in energy-efficient buildings |
| K_ADD_K12 | basic methods of analysis and modeling of thermal-flow processes in buildings |
| K_ADD_K13 | selected aspects of modern interior lighting technology including energy efficiency, use of daylight and non-visual effects of light |
| K_ADD_K14 | selected aspects of energy-efficient buildings design |
| K_ADD_K15 | solutions, standards, and systems used in smart buildings |
| K_ADD_ | IoT tools allowing to improve functionality of buildings and to increase energy |

| K16 | savings |
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| K_ADD_K17 | the idea and purpose of intercultural education, selected elements of Polish culture and customs as well as cultural differences between their country of origin and Poland |
| Skills: is able to | |
| K_ADD_S01 | properly plan research, perform it, interpret its results, and draw correct conclusions on this basis |
| K_ADD_S02 | use acquired knowledge for critical analysis, synthesis, creative interpretation, and presentation of issues in the field of environmental engineering and modern construction |
| K_ADD_S03 | properly use up-to-date information on innovations in environmental engineering/construction/ architecture/ lighting/ IoT technology |
| K_ADD_S04 | properly select and use learned methods and tools, including advanced information and communication techniques (ICT) when solving complex problems occurring in engineering and propose their improvement or alternative solutions |
| K_ADD_S05 | identify problems, formulate, and test research hypotheses, and recognize modern and innovative aspects of solving them |
| K_ADD_S06 | make an economic evaluation of the proposed technical, technological and system solutions in buildings |
| K_ADD_S07 | properly select data for the design of networks, systems, and technologies in buildings |
| K_ADD_S08 | use scientific, popular science and industry literature, subject standards, legal acts, internet databases in English language; properly use the information obtained, as well as formulate and present opinions |
| K_ADD_S09 | analyze BIM information of object and parametric modeling, apply standards, solve problems of 2D and 3D parametric modeling, manage digital documentation. |
| K_ADD_S10 | act in an entrepreneurial way through training and improving professional competences, and initiate activities aimed at using their knowledge and skills |
| K_ADD_S11 | be creative and entrepreneurial, cooperate and work in a group, assuming different roles in it |
| K_ADD_S12 | properly select the technical conditions for designing buildings in relation to climatic conditions in order to design selected building elements of the facility |
| K_ADD_S13 | assess the needs and propose lighting system solutions in accordance with the latest knowledge and requirements |
| K_ADD_S14 | select IoT technologies, systems, and components for use in an intelligent building |
| K_ADD_S15 | establish positive cross-cultural relationships, analyze values, norms and behaviors, and adapt their behavior to the cultural context |

| Social competence: is ready to | |
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| K_ADD_C01 | analyze the content obtained from various sources, as well as to critically evaluate it and use it in professional work |
| K_ADD_C02 | use knowledge to shape the environmental awareness of society, professional and ethical, and take responsibility for their activities |
| K_ADD_C03 | formulate and communicate to the public, in a commonly understood way, information and opinions concerning scientific achievements as well as other aspects of the engineer's activities, presenting different points of view |
| K_ADD_C04 | reliably and responsibly perform the assumed or assigned professional roles, taking into account the social determinants of the surrounding environment |
| K_ADD_C05 | consciously apply non-technical aspects of engineering activity and consider its impact on the environment and the related responsibility for the decisions taken |
| K_ADD_C06 | apply and adhere to the principles of professional ethics and conduct themselves in a professional manner while performing job duties and to enforce such behavior on others |
| K_ADD_C07 | communicate effectively in a variety of intercultural contexts, reflect critically on stereotypical perceptions of reality, and to accept diversity and differing points of view |