

**AUTUMN SCHOOL PROGRAM**

**«Bioenergy Systems in Agricultural Production»**

Certificate – 2.0 ECTS credits (51 hours)

17 teaching hours and 34 non-contact hours

Number of participants: 25 – 45 people

Category of participants: students, production staff, experts in renewable energy, scientists, academic staff, self-easements, and top managers

Duration: 10 working days (two weeks)

Kyiv – 2023

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| **Day, topic, credits, control** | | **Moderator** |
| Day 1 (16.11.2023)  Opening!  Welcoming speech of the Head of KPIs for the TREATY project at the National University of Life and Environment Sciences of Ukraine, Prof. Gennadii GOLUB.  Welcoming speech of the Dean of Mechanical and Technological Faculty, Prof. Viacheslav BRATISHKO.  Welcoming speech of the Dean of the Faculty of Construction and Design, Assoc. Prof. Zinovii RUZHILO.  1. The topic: "Bioenergy systems in agricultural production. Structure, objects, principles of functioning".  1 hour (0.1 ECTS credits)  2. The topic: "Machines and equipment for biodiesel production".  1 hour (0.1 ECTS credits)  The type of control – test. | | Prof. Gennadii GOLUB  Assoc. Prof. Nataliya TSYVENKOVA |
| Day 2 (17.11.2023)  3. The topic: "Machines and equipment for bioethanol production".  1 hour (0.1 ECTS credits)  The type of control – test. | Prof. Gennadii GOLUB  Assoc. Prof. Nataliya TSYVENKOVA | |
| Day 3 (20.11.2023)  4. The topic: "Modern technologies of biogas production".  2 hours (0.2 ECTS credits)  The type of control – test. | Prof. Gennadii GOLUB  Prof. Viacheslav BRATISHKO  Assoc. Prof. Nataliya TSYVENKOVA | |
| Day 4 (21.11.2023)  5. The topic: "Production and applications of syngas from agricultural plant biomass".  2 hours (0.2 ECTS credits)  The type of control – test. | Prof. Gennadii GOLUB  Assoc. Prof. Nataliya TSYVENKOVA | |
| Day 5 (22.11.2023)  6. The topic: «The technologies of biohydrogen production».  1 hour (0.1 ECTS credits)  The type of control – test. | Prof. Gennadii GOLUB  Assoc. Prof. Nataliya TSYVENKOVA | |
| Day 6 (23.11.2023)  7. The topic: "Boosting solar fuel production for an efficient, reliable, and secure energy supply».  Visiting the Institute of Renewable Energy of the National Academy of Sciences of Ukraine".  2 hours (0.2 ECTS credits)  The type of control – test. | Prof. Gennadii GOLUB  Prof. Stepan KUDRYA  Assoc. Prof. Nataliya TSYVENKOVA | |
| Day 7 (24.11.2023)  8. The topic: "Growing of energy crops for industry needs in «renewable energy".  1 hour (0.1 ECTS credits)  9. The topic: "Technologies of heat production by direct combustion of biomass in modern boilers for solid fuel».  Visiting the enterprise «Institute of bioenergy crops and sugar beets of the National Academy of Sciences of Ukraine".  2 hours (0.2 ECTS credits)  The type of control – test. | Prof. Gennadii GOLUB  Prof. Oleksandr Hanzhenko  Assoc. Prof. Nataliya TSYVENKOVA | |

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| Day 8 (27.11.2023)  10. The topic: "Mechatronic approaches in the design of bioenergetic processes means".  Visiting laboratories of Mechanical and Technological Faculty and the Faculty of Construction and Design. Excursion to the Botanical Garden of National University of Life and Environmental Sciences of Ukraine.  2 hours (0.2 ECTS credits)  The type of control – test. | Prof. Gennadii GOLUB  Prof. Yurii RomasevYch  Assoc. Prof. Nataliya TSYVENKOVA |
| Day 9 (28.11.2023)  11. The topic: "Renewable energy facilities on Ukrainian energy market".  Visiting "green technologies" facilities of the Scientific and Technical Centre "Biomass".  2 hours (0.2 ECTS credits)  The type of control – test. | Prof. Gennadii GOLUB  Assoc. Prof. Nataliya TSYVENKOVA  Prof. Heorgiy HELETUKHA |
| Day 10 (29.11.2023)  Summarizing. Presentation of certificates to graduates. | Prof. Gennadii GOLUB  Prof. Viacheslav BRATISHKO  Assoc. Prof. Zinovii RUZHILO |

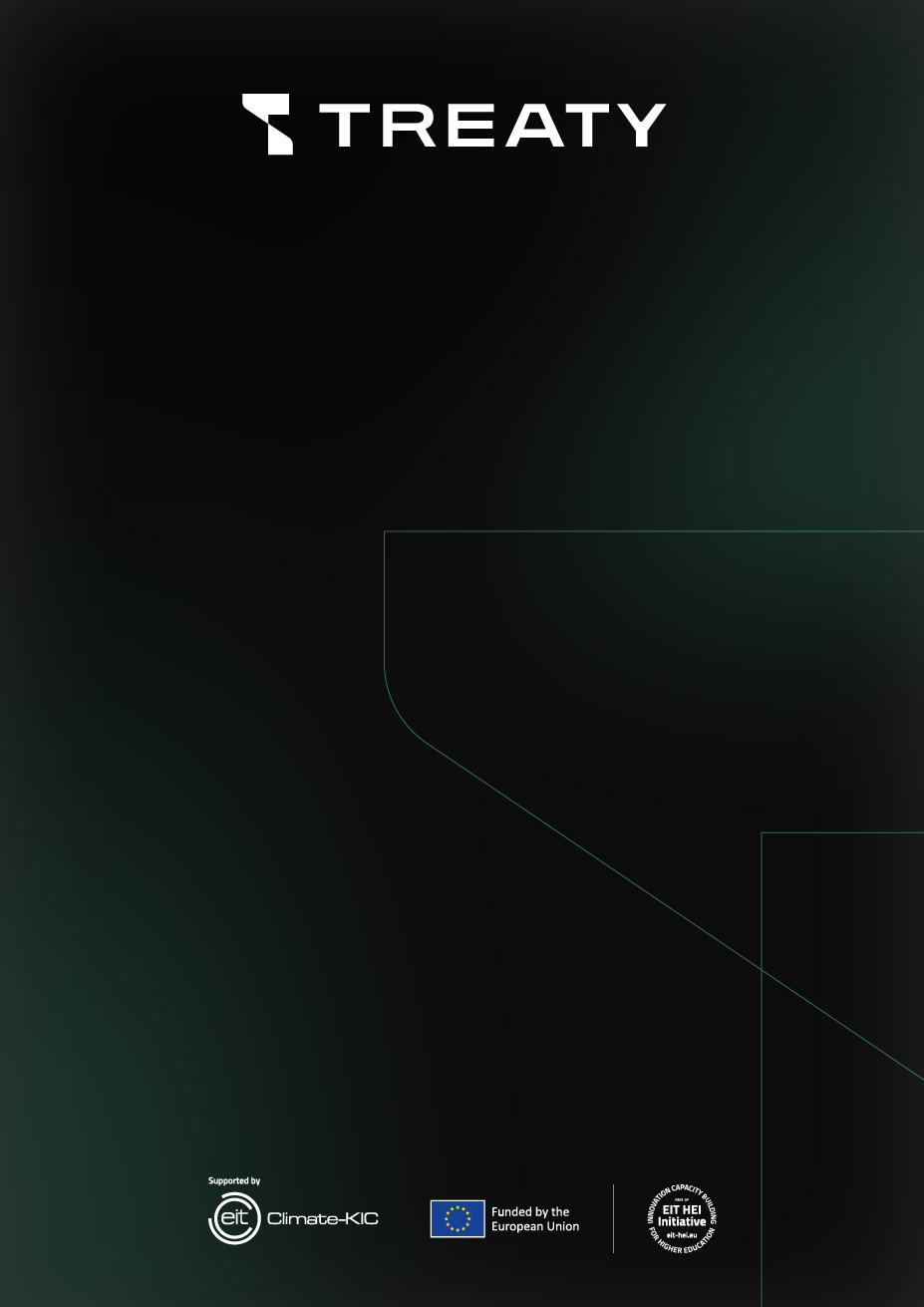
## Course Timetable

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| **1** | **Date and Time** | **Instructor** | **Venue** |
| 1st | 16.11.2023,  15:10 – 16:30 | Prof. Gennadii GOLUB | NUBiP, building 11,  classroom 105 |
| 2nd | 17.11.2023,  15:10 – 16:30 | Prof. Gennadii GOLUB | NUBiP, building 11,  classroom 105 |
| 3rd | 20.11.2023,  15:10 – 16:30 | Prof. Gennadii GOLUB  Viacheslav BRATISHKO | NUBiP, building 11,  classroom 105 |
| 4th | 21.11.2023,  15:10 – 16:30 | Prof. Gennadii GOLUB | NUBiP, building 11,  classroom 105 |
| 5th | 22.11.2023,  15:10 – 16:30 | Prof. Gennadii GOLUB | NUBiP, building 11,  classroom 105 |
| 6th | 23.11.2023,  10:10 – 11:30 | Prof. Gennadii GOLUB  Prof. Stepan KUDRYA | Institute of Renewable Energy of the National Academy of Sciences of Ukraine |
| 7th | 24.11.2023,  10:10 – 11:30 | Prof. Gennadii GOLUB  Prof. Oleksandr Hanzhenko | Institute of bioenergy crops and sugar beets of the National Academy of Sciences of Ukraine |
| 8th | 27.11.2023,  13:30 – 14:50 | Prof. Yurii RomasevYch  Prof. Gennadii GOLUB | Laboratories of Mechanical and Technological Faculty and the Faculty of Construction and Design |
| 9th | 28.11.2023  10:10 – 11:30 | Prof. Gennadii GOLUB  Prof. Heorgiy HELETUKHA | Scientific and Technical Centre "Biomass" |
| 10 th | 29.11.2023  10:10 – 13:10  Summarizing. Presentation of certificates to graduates. | Prof. Gennadii GOLUB  Prof. Viacheslav BRATISHKO  Assoc. Prof. Zinovii RUZHILO | building 11,  library reading room |

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| **Seminars** | **Date and Time** | **Instructor** | **Venue** |
| 1st | 16.11.2023,  16:50 – 18:10 | Assoc. Prof. Nataliya TSYVENKOVA | NUBiP, building 11,  classroom 105 |
| 2nd | 17.11.2023,  16:50 – 18:10 | Assoc. Prof. Nataliya TSYVENKOVA | NUBiP, building 11,  classroom 105 |
| 3rd | 20.11.2023,  16:50 – 18:10 | Assoc. Prof. Nataliya TSYVENKOVA | NUBiP, building 11,  classroom 105 |
| 4th | 21.11.2023,  16:50 – 18:10 | Assoc. Prof. Nataliya TSYVENKOVA | NUBiP, building 11,  classroom 105 |
| 5th | 22.11.2023,  16:50 – 18:10 | Assoc. Prof. Nataliya TSYVENKOVA | NUBiP, building 11,  classroom 105 |
| 6th | 23.11.2023,  11:50 – 13:10 | Prof. Stepan KUDRYA  Assoc. Prof. Nataliya TSYVENKOVA | Institute of Renewable Energy of the National Academy of Sciences of Ukraine |
| 7th | 24.11.2023,  11:50 – 13:10 | Prof. Oleksandr Hanzhenko  Assoc. Prof. Nataliya TSYVENKOVA | Institute of bioenergy crops and sugar beets of the National Academy of Sciences of Ukraine |
| 8th | 27.11.2023,  15:10 – 16:30 | Prof. Yurii RomasevYch  Assoc. Prof. Nataliya TSYVENKOVA | Botanical Garden of National University of Life and Environmental Sciences of Ukraine |
| 9th | 28.11.2023,  11:50 – 13:10 | Prof. Heorgiy HELETUKHA  Assoc. Prof. Nataliya TSYVENKOVA | Scientific and Technical Centre "Biomass" |

## Contact Details of Instructors

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