

**Machines and equipment for bioenergy**

Instructors:

Nataliya Tsyvenkova

Ivan Omarov



**Course Handbook**

TREATY - Nurturing deep tech talents for clean and sustainable energy transition

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## Course Information

Title: Machines and equipment for bioenergy

Instructor(s): Nataliya Tsyvenkova, Ivan Omarov

ECTS: 3

|  |  |
| --- | --- |
| Course structure: | 90 hours |
| Lecture classes | 15 hours |
| Laboratory classes | 15 hours |
| Personal Activities | 60 hours |

Mode of delivery: *[ hybrid]*

### Course Summary

*The aim of the discipline is to develop the future specialist's ability to apply the acquired knowledge, skills, communication skills and abilities in solving problems and issues related to the design of bioenergy machinery and equipment and to implement the acquired knowledge in professional activities.*

*The objective of the specialization is to acquire knowledge and practical skills related to machines and equipment for the implementation of biotechnological processes in the agricultural sector.*

### Learning Outcomes

Upon completion of the course, students will be able to know about:

*1. Designs of machinery and equipment for the production and use of liquid fuels from plant material, such as biodiesel, bioethanol, pyrolysis oil, etc.*

*2. Designs of machinery and equipment for the production and use of gaseous fuels from plant material, such as biogas, generator gas, pyrolysis gas.*

*3. Designs of machinery and equipment for the production and use of solid biofuels from plant material.*

*4. Designs of equipment for the conversion of solar energy into electricity.*

*5. Designs of equipment for converting wind energy into electricity.*

### Assessment

In order for each participant to complete successfully the course and be awarded the corresponding ECTS credits, they must pass the course assessment. The outcome of the assessment can be either Pass or Fail.

**Assessment methods**

* Exam

|  |  |
| --- | --- |
| **Learning outcomes** | **Assessment examples** |
| * *Designs of machinery and equipment for the production and use of liquid fuels from plant material, such as biodiesel, bioethanol, pyrolysis oil, etc.* | Oral presentation, quiz, laboratory research |
| * *Designs of machinery and equipment for the production and use of gaseous fuels from plant material, such as biogas, generator gas, pyrolysis gas.* | Oral presentation, quiz, laboratory research |
| * *Designs of machinery and equipment for the production and use of solid biofuels from plant material.* | Oral presentation, quiz, laboratory research |
| * *Designs of equipment for the conversion of solar energy into electricity.* | Oral presentation, quiz, laboratory research |
| * *Designs of equipment for converting wind energy into electricity.* | Oral presentation, quiz, laboratory research |

### Bibliography

*[Please provide of a list of bibliography and useful resources]*

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2. Відновлювана енергетика в аграрному виробництві / Скидан О.В., Голуб Г.А., Кухарець С.М., Ярош Я.Д., Чуба В.В., Медведський О.В., Цивенкова Н.М., Соколовський О.Ф., Кухарець В.В.; за ред. О.В. Скидна і Г.А. Голуба. Київ-Житомир: НУБіП України-ЖНАЕУ, 2023. 449 с.
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6. Виробництво та використання дизельного біопалива. Механіко-технологічні основи: монографія / за ред. Г. А. Голуба. К.: НУБіП України, 2017. 340 с.
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### Course Timetable

**The 1-st group**

|  |  |  |  |
| --- | --- | --- | --- |
| **Lecture** | **Date and Time** | **Instructor** | **Venue** |
| 1st | 24.04.2024,  10:10 – 11:30 | Assoc. Prof. Nataliya TSYVENKOVA | NUBiP, building 11,  classroom 105 |
| 2nd | 01.05.2024,  10:10 – 11:30 | Assoc. Prof. Nataliya TSYVENKOVA | NUBiP, building 11,  classroom 105 |
| 3rd | 08.05.2024,  10:10 – 11:30 | Assoc. Prof. Nataliya TSYVENKOVA | https://meet65.webex.com/meet/pr1327098956 |
| 4th | 08.05.2024,  11:50 – 13:10 | Assoc. Prof. Nataliya TSYVENKOVA | https://meet65.webex.com/meet/pr1327098956 |
| 5th | 15.05.2024,  10:10 – 11:30 | Assoc. Prof. Nataliya TSYVENKOVA | NUBiP, building 11,  classroom 105 |
| 6th | 15.05.2024,  11:50 – 13:10 | Assoc. Prof. Nataliya TSYVENKOVA | NUBiP, building 11,  classroom 105 |
| 7th | 22.05.2024,  10:10 – 11:30 | Assoc. Prof. Nataliya TSYVENKOVA | https://meet65.webex.com/meet/pr1327098956 |
| 8th | 29.05.2024,  10:10 – 11:30 | Assoc. Prof. Nataliya TSYVENKOVA | https://meet65.webex.com/meet/pr1327098956 |
| **Summarizing. Presentation of certificates to graduates.** | 21.06.2024  08:30 – 09:50 | Prof. Gennadii GOLUB  Prof. Viacheslav BRATISHKO  Assoc. Prof. Zinovii RUZHILO | building 11,  library reading room |

**The 2-nd group**

|  |  |  |  |
| --- | --- | --- | --- |
| **Lecture** | **Date and Time** | **Instructor** | **Venue** |
| 1st | 24.04.2024,  15:10 – 16:30 | Assoc. Prof. Nataliya TSYVENKOVA | NUBiP, building 11,  classroom 105 |
| 2nd | 01.05.2024,  15:10 – 16:30 | Assoc. Prof. Nataliya TSYVENKOVA | NUBiP, building 11,  classroom 105 |
| 3rd | 08.05.2024,  15:10 – 16:30 | Assoc. Prof. Nataliya TSYVENKOVA | https://meet65.webex.com/meet/pr1327098956 |
| 4th | 08.05.2024,  16:50 – 18:10 | Assoc. Prof. Nataliya TSYVENKOVA | https://meet65.webex.com/meet/pr1327098956 |
| 5th | 15.05.2024,  15:10 – 16:30 | Assoc. Prof. Nataliya TSYVENKOVA | NUBiP, building 11,  classroom 105 |
| 6th | 15.05.2024,  16:50 – 18:10 | Assoc. Prof. Nataliya TSYVENKOVA | NUBiP, building 11,  classroom 105 |
| 7th | 22.05.2024,  15:10 – 16:30 | Assoc. Prof. Nataliya TSYVENKOVA | https://meet65.webex.com/meet/pr1327098956 |
| 8th | 29.05.2024,  15:10 – 16:30 | Assoc. Prof. Nataliya TSYVENKOVA | https://meet65.webex.com/meet/pr1327098956 |
| **Summarizing. Presentation of certificates to graduates.** | 21.06.2024  08:30 – 09:50 | Prof. Gennadii GOLUB  Prof. Viacheslav BRATISHKO  Assoc. Prof. Zinovii RUZHILO | building 11,  library reading room |

**The 1-st group**

|  |  |  |  |
| --- | --- | --- | --- |
| **Seminars, practice and laboratory works** | **Date and Time** | **Instructor** | **Venue** |
| 1st | 25.04.2024,  13:10 – 14:50 | Researcher  Ivan OMAROV | NUBiP, building 11,  classroom 105 |
| 2nd | 02.05.2024,  13:10 – 14:50 | Researcher  Ivan OMAROV | NUBiP, building 11,  classroom 105 |
| 3rd | 02.05.2024,  15:10 – 16:30 | Researcher  Ivan OMAROV | NUBiP, building 11,  classroom 105 |
| 4th | 09.05.2024,  13:10 – 14:50 | Researcher  Ivan OMAROV | NUBiP, building 11,  classroom 105 |
| 5th | 16.05.2024,  13:10 – 14:50 | Researcher  Ivan OMAROV | NUBiP, building 11,  classroom 105 |
| 6th | 23.05.2024,  13:10 – 14:50 | Researcher  Ivan OMAROV | NUBiP, building 11,  classroom 105 |
| 7th | 30.05.2024,  13:10 – 14:50 | Researcher  Ivan OMAROV | NUBiP, building 11,  classroom 105 |
| 8th | 06.06.2024  13:10 – 14:50 | Researcher  Ivan OMAROV | NUBiP, building 11,  classroom 105 |

**The 2-nd group**

|  |  |  |  |
| --- | --- | --- | --- |
| **Seminars, practice and laboratory works** | **Date and Time** | **Instructor** | **Venue** |
| 1st | 26.04.2024,  13:10 – 14:50 | Researcher  Ivan OMAROV | NUBiP, building 11,  classroom 105 |
| 2nd | 03.05.2024,  13:10 – 14:50 | Researcher  Ivan OMAROV | NUBiP, building 11,  classroom 105 |
| 3rd | 03.05.2024,  15:10 – 16:30 | Researcher  Ivan OMAROV | NUBiP, building 11,  classroom 105 |
| 4th | 10.05.2024,  13:10 – 14:50 | Researcher  Ivan OMAROV | NUBiP, building 11,  classroom 105 |
| 5th | 17.05.2024,  13:10 – 14:50 | Researcher  Ivan OMAROV | NUBiP, building 11,  classroom 105 |
| 6th | 24.05.2024,  13:10 – 14:50 | Researcher  Ivan OMAROV | NUBiP, building 11,  classroom 105 |
| 7th | 31.05.2024,  13:10 – 14:50 | Researcher  Ivan OMAROV | NUBiP, building 11,  classroom 105 |
| 8th | 07.06.2024  13:10 – 14:50 | Researcher  Ivan OMAROV | NUBiP, building 11,  classroom 105 |

**Contact Details of Instructor(s)**

|  |  |  |
| --- | --- | --- |
| **Name** | **Email** | **Telephone number** |
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