



Program of course
MFA & LCA
19.06.-28.06.2015

TEMPUS IV

ADVANCED TRAINING IN INTEGRATED SUSTAINABLE WASTE MANAGEMENT FOR SIBERIAN COMPANIES AND AUTHORITIES



Program of course

MATERIAL FLOW ANALYSIS & LIFE CYCLE ASSESSMENT

Technical University of Denmark
(Danmarks Tekniske Universitet)
19.06.2015–28.06.2015

Participations:

Irkutsk National Technical University (IRNTU)

1. Zelinskaya Elena, *professor, Head of Magistracy "Waste management", Head of the program "Environmental Security in the field of waste management."*
2. Ulanova Olga, *associate professor, vice director of International Environmental Centre «Baikal Waste Management», a coordinator of the «TIWaSiC» project.*
3. Starostina Vlada, *associate professor, Department of Mineral Processing and Engineering Ecology.*
4. Tutunin Vedeney, *associate professor, Department of Mineral Processing and Engineering Ecology, director of the engineering center "Inzhilnzhiniring"*
5. Tolmacheva Natalia, *senior researcher, head of the school of engineering center "Inzhilnzhiniring"*
6. Ziryanova Ekaterina, *PhD student, Department of Mineral Processing and Engineering Ecology.*

East Siberia State University of Technology and Management (ESSUTM)

7. Alberg Natalia, *associate professor of department of ecology.*

Transbaikal State University (TSU)

8. Rasmahnin Konstantin, *associate professor, Head of Department of Mineral processing.*

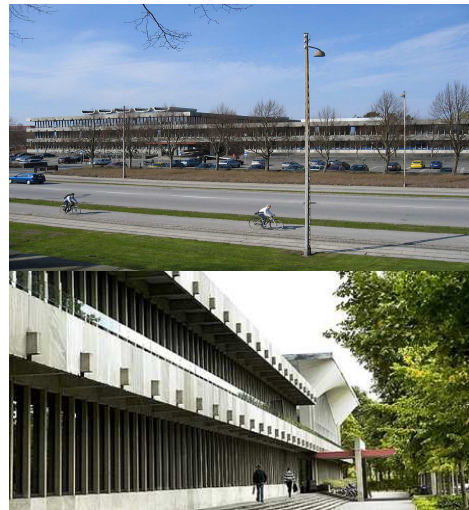
Far Eastern Federal University (FEFU)

9. Holodov Aleksey, *Deputy Head of the School of Engineering*
10. Blinovskaya Jana, *professor, Department on Environmental.*
11. Danilov Valeriy, *assessment professor, Head of the Laboratory of fuel elements.*

General Information:

Course location:

Technical University of Denmark
Anker Engelundsvej 1
Building 115
2800 Kgs. Lyngby



DTU presenters and assistants:

- Alessio Boldrin, Senior Researcher, MFA
- Anders Damgaard, Senior Researcher, LCA/EASETECH
- Irina Naroznova, PhD Student, MFA/LCA/EASETECH,
- Thomas Christensen, Professor, LCA/EASETECH

Accommodation:

Urban house Copenhagen Colbjørnsensgade 5-11, Copenhagen, 1652, Denmark



Meeting at the airport and hotel transfers:

Arrival	Participants	Pickup
19 June Friday at 11:30 flight SU 2658 Moscow - Copenhagen	Zelinskaya Elena Tolmacheva Natalia Ziryanova Ekaterina Danilov Variy Tutunin Vedeney	Thomas Christensen
19 June Friday at 18:20 Flight AB 8036 Berlin- Copenhagen	Ulanova Olga	Thomas Christensen
19 June Friday at 11:30 flight SU 2496 Moscow - Copenhagen	Razmachnin Konstantin Holodov Aleksey Blinovskaya Jana Alberg Natalia	Thomas Christensen

How to get from Copenhagen to Lyngby (DTU):

At bottom of this information sheet you can find a detailed description of your way from your hotel to DTU, an approximate time is 50-60 min.

Necessary things for work:

You will have to bring a PC - please note that the PC must run Windows and have at least 1GB free harddisk space.

Program of course:

Friday, 19 June 2015

11:30 – 21:15	Arrival
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Saturday, 20 June 2015

10.30 – 15.00	Excursion «Travelling through Danish culture and history»
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Sunday, 21 June 2015

14.00 – 19.00	Organized sightseeing: Canal-trip, Rosenborg castle in CHP
19.00 – 21.00	Dinner in Tivoli

Monday, 22 June 2015

9.00 – 9.30	Welcome, practical issues, program overview
9.30 – 11.30	<u>MFA methodology - I, II (lectures)</u> concepts, terms, examples
11.30-12.30	Lunch
12.30-13.30	<u>Introduction to the software (lecture+demonstration)</u> software installation on laptops, showing interface, main features, result extraction
13.30 – 17.00	<u>Assignment 1 (STAN)</u> - a task to build a simple material flow diagram

Tuesday, 23 June 2015

09.00 – 11.30	<u>Collection and Analysis of Data for MFA (lecture)</u> system boundaries and nature of data
11.30 – 12.30	<i>Lunch</i>
12.30 – 14.00	<u>Uncertainties in MFA (lecture+demonstration)</u> mathematical basics, how does it work in STAN
14.00 – 16.00	<u>Assignment 2 (STAN)</u> - a task to build a system according to a case and perform calculations on the mass balances and uncertainties.

Wednesday, 24 June 2015

09.00 – 11.30	<u>Introduction to LCA methodology - I, II, III (lectures)</u> Principle, four elements according ISO, four steps for Impact assessment, LCA application and the 2 modelling approaches.
11.30 – 12.30	<i>Lunch</i>
12.30 – 14.00	<u>LCA with EASETECH (lecture+demonstration)</u> software installation, main functions and data flow, showing interface
14.00 – 16.00	<u>Assignment 1 (EASETECH)</u> - a task to create a project and build waste composition

Thursday, 25 June 2015

09.00 – 11.30	<u>Waste generation, collection and transportation (lecture+demonstration)</u> principles, datasets in EASETECH
11.00 – 12.00	<i>Lunch</i>
13.00 – 17:00	<u>Excursions</u> visiting waste incinerator and waste recycling station

Friday, 26 June 2015

09.00 – 9.30	<u>Waste utilization in Europe</u> waste treatment statistics in world, EU and Denmark
9.30 – 10.30	<u>Landfills - I, II (lectures+demonstration)</u> principle, landfill in EASETECH
10.30 – 11.30	<u>Assignment 2 (EASETECH)</u> - a task to build waste treatment scenario with a landfill
11.30 – 12.30	<i>Lunch</i>
12.30 – 13.00	<u>Material recycling (lecture+demonstration)</u> principle, recycling in EASETECH
13.00 – 17.00	<u>Assignment 3 (EASETECH)</u> - a task to build a scenario with material recycling

Saturday, 27 June 2015

09.00 – 11.30	<u>Waste incineration and energy recovery - I, II (lectures+demonstrations)</u> system description, energy substitution and marginals, incineration in EASETECH
11.30 – 12.30	<i>Lunch</i>
12.30 – 16.00	Assignment 4-5 (EASETECH) - a task to build a scenario with waste incineration - a task to conduct Impact Assessment (based on the scenarios build before), result interpretation
16.00 – 17.00	Discussion

Cultural programme:

20.06.2015

10.00 – 15.00

Excursion «Travelling through Danish culture and history»



<http://vikingtours.ru/gastronomicheske-tury/blyuda-datskoj-kukhni>

21.06.2015

14:00 – 21.00

Excursion is organised by DTU.

Copenhagen canals trip.



Rosenberg Castle



Amusement park Tivoli

There will be dinner at one of the restaurants in Tivoli park.