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# **THE AGENDA OF AN INTENSIVE INTERNATIONAL EDUCATION PROGRAMME**

## **SUSTAINABLE SUPPLY CHAINS**

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## I. A brief description of the course

The course “Sustainable Supply Chains” focuses on the contemporary conditions of supply chain operations in the context of environmental, social and economic challenges. Particular attention is given to the principles of sustainable development, the requirements of the European Green Deal, transport decarbonisation, and responsible resource management on a global scale. The course content combines a theoretical perspective with the analysis of practical solutions applied in companies and international logistics networks.

Participants become familiar with the differences between a supply chain and a logistics chain, the structure of a sustainable supply chain, the role of information, integration and partnership relations, as well as tools for measuring environmental and operational performance. Important elements of the course include reverse logistics, green transport and current trends in transforming supply chains towards a low-emission and circular economy.

The course has an international character and is addressed to students from different countries who are interested in sustainable supply chain management, green logistics and climate transformation in the economy. The acquired knowledge and skills can be applied in business practice, research activity and international projects related to logistics, transport and management.

### Introducing participants to the current state of knowledge in the field:

The course content covers fundamental and advanced issues related to sustainable supply chains, including their structure, information processes, mechanisms of inter-organisational cooperation and methods for assessing the environmental impact of logistics activities. Participants are introduced to current research directions and business practice, with particular emphasis on energy transition, digitalisation and the concept of circular economy.

### Learning outcomes

After completing the course, the participant has structured knowledge of sustainable supply chain functioning, is able to analyse their structure and environmental performance, and apply selected tools supporting sustainable management. The participant also develops the ability to work in an international environment, critically analyse logistics problems and make responsible decisions while considering environmental and social aspects.

## II. Duration, number of training hours and method of organisation

| Training content                                 | Number of hours | Form of organisation |                    |
|--------------------------------------------------|-----------------|----------------------|--------------------|
|                                                  |                 | Theoretical training | Practical training |
| Supply Chain vs. Logistics Chain                 | 3               | 2                    | 1                  |
| The Essence of Sustainable (Green) Supply Chains | 4               | 2                    | 1                  |



|                                                                      |   |   |   |
|----------------------------------------------------------------------|---|---|---|
| The Structure of Sustainable Supply Chain                            | 4 | 3 | 1 |
| The Importance of Information in Supply Chain Management             | 3 | 3 | 1 |
| The Importance of Integration and Relationships in Supply Chain      | 3 | 2 | 1 |
| Tools and Instruments Used for Sustainable Supply Chain Measurement  | 3 | 2 | 1 |
| Application Areas of Sustainable (Green) Supply Chains               | 3 | 2 | 1 |
| Sustainable Supply Chain in Reverse Logistics                        | 2 | 1 | 1 |
| Environmental Needs and Green Transport vs. Sustainable Supply Chain | 2 | 1 | 1 |
| Trends in Sustainable (Green) Supply Chains                          | 1 | 1 | 0 |
| Laboratory classes                                                   | 2 | 0 | 2 |

### III. Prerequisites for the participants

The course participants may include university students from different countries, particularly those studying logistics, transport, management, economics, or related fields. The course has an international character and is adapted to the diverse educational backgrounds of the participants.

Participants are expected to have basic knowledge of enterprise functioning, logistics processes and management principles. General familiarity with issues related to sustainable development or environmental protection is recommended but not required.

Participants should be able to work in teams, analyse simple organisational problems and communicate in an international environment. English language proficiency at a level which enables active participation in classes, discussions and project work is required.

### IV. Learning outcomes

| A learning outcome category<br><i>Knowledge</i> | Description of the learning outcome<br>(having completed the course, a student/ participant is able to...) | Verification criteria<br>The participant:                                                     |
|-------------------------------------------------|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| <b>K1</b>                                       | The student knows and understands the key concepts, structure and processes of sustainable supply          | The student explains basic concepts related to sustainable supply chains and identifies their |



|                            |                                                                                                                                              |                                                                                                                         |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
|                            | chains.                                                                                                                                      | main elements.                                                                                                          |
| <b>K2</b>                  | The student understands the importance of integration, information, and inter-organisational relationships in supply chain management.       | The student describes the role of cooperation, information flow, and coordination in effective supply chain management. |
| <b>K3</b>                  | The student knows the methods and tools used to measure the environmental impact of logistics processes, including carbon footprint and LCA. | The student characterises selected environmental indicators and explains how they are applied in practice.              |
| <b>K4</b>                  | The student understands current development trends in green transport, reverse logistics, and the circular economy.                          | The student discusses examples of solutions supporting low-emission transformation in supply chains.                    |
| <b>Skills</b>              | <b>Description of the learning outcome<br/>(having completed the course, a student/ participant is able to...)</b>                           | <b>Verification criteria<br/>The participant:</b>                                                                       |
| <b>S1</b>                  | The student is able to analyse the structure and functioning of a supply chain, including environmental aspects.                             | The student analyses a simple case and identifies elements influencing sustainability.                                  |
| <b>S2</b>                  | The student is able to interpret basic environmental indicators and emission-related data in logistics.                                      | The student analyses sample data and formulates conclusions regarding environmental performance.                        |
| <b>S3</b>                  | The student is able to propose selected solutions supporting sustainable supply chains.                                                      | The student develops a short concept for improving a logistics process as a project task.                               |
| <b>S4</b>                  | The student is able to work in teams to solve logistics problems in an international context.                                                | The student participates in group work and presents joint solutions.                                                    |
| <b>S5</b>                  | The student is able to communicate analytical results and conclusions in oral or written form.                                               | The student prepares a short presentation or report based on the conducted analysis.                                    |
| <b>Social competencies</b> | <b>Description of the learning outcome<br/>(having completed the course, a student/ participant is able to...)</b>                           | <b>Verification criteria<br/>The participant:</b>                                                                       |
| <b>C1</b>                  | The student demonstrates readiness to consider environmental and social                                                                      | The student indicates the importance of environmental                                                                   |



|           |                                                                                                  |                                                                                                                                                   |
|-----------|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
|           | aspects in logistics decision-making.                                                            | responsibility in analysed cases.                                                                                                                 |
| <b>C2</b> | The student shows openness to cooperation in an international and multicultural environment.     | The student follows safety, ethical, and data-handling principles.<br>S/he acts with accuracy and reliability when performing tasks.              |
| <b>C3</b> | The student demonstrates responsibility for the quality of proposed logistics solutions.         | The student works constructively in group tasks and laboratory activities.<br>S/he justifies proposed actions and their impact on sustainability. |
| <b>C4</b> | The student understands the need for continuous learning in sustainable supply chain management. | The student identifies areas for further development of knowledge and competences.                                                                |

## V. Teaching programme and content

| Class / Module topic                             | Range of topics                                                                           | Form of classes                   | Number of hours | Learning outcomes  |
|--------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------|-----------------|--------------------|
| Supply Chain vs. Logistics Chain                 | Basic concepts of green logistics, sustainable development in logistics, circular economy | Interactive lecture<br>Case study | 3               | K1, K2, S1         |
| The Essence of Sustainable (Green) Supply Chains | Fundamentals, models, ESG and social responsibility                                       | Interactive lecture<br>Discussion | 4               | K1, K2, K3, S1, C1 |
| The Structure of Sustainable Supply Chain        | Supply chain structure, integration of processes, digitalisation and innovation           | Interactive lecture<br>Case study | 4               | K1, K2, S1, S2     |
| The Importance of Information in                 | Information systems,                                                                      | Interactive                       | 3               | K1, K2, S2         |



|                                                                      |                                                                                              |                                            |   |                                |
|----------------------------------------------------------------------|----------------------------------------------------------------------------------------------|--------------------------------------------|---|--------------------------------|
| Supply Chain Management                                              | environmental data, ESG reporting                                                            | lecture<br>Data analysis                   |   |                                |
| The Importance of Integration and Relationships in Supply Chain      | Cooperation, partnerships, stakeholder management                                            | Workshop<br>Discussion                     | 3 | K2, S4, C2                     |
| Application Areas of Sustainable (Green) Supply Chains               | Production, distribution, urban logistics, best practices                                    | Case study<br>Group work                   | 3 | K4, S1, S3                     |
| Tools and Instruments Used for Sustainable Supply Chain Measurement  | Environmental indicators, LCA, sustainable finance                                           | Interactive lecture<br>Data interpretation | 3 | K3, S2, S3                     |
| Sustainable Supply Chain in Reverse Logistics                        | Recovery models, recycling, circular economy                                                 | Case study<br>Discussion                   | 2 | K4, S1                         |
| Environmental Needs and Green Transport vs. Sustainable Supply Chain | European Green Deal in transport, decarbonisation, new technologies                          | Interactive lecture<br>Example analysis    | 2 | K4, S2                         |
| Trends in Sustainable (Green) Supply Chains                          | Global trends, digital and low-emission models                                               | Interactive lecture<br>Discussion          | 1 | K4, S4                         |
| Laboratory classes                                                   | Case analysis, sustainable supply chain design, indicator interpretation, team presentations | Practical classes<br>Project work          | 2 | S1, S2, S3, S4, S5, C1, C2, C3 |

|                                     |              |
|-------------------------------------|--------------|
| Name of the subject / thematic unit | No. of hours |
|-------------------------------------|--------------|



|                                                                      |   |
|----------------------------------------------------------------------|---|
| Supply Chain vs. Logistics Chain                                     | 3 |
| The Essence of Sustainable (Green) Supply Chains                     | 4 |
| The Structure of Sustainable Supply Chain                            | 4 |
| The Importance of Information in Supply Chain Management             | 3 |
| The Importance of Integration and Relationships in Supply Chain      | 3 |
| Tools and Instruments Used for Sustainable Supply Chain Measurement  | 3 |
| Application Areas of Sustainable (Green) Supply Chains               | 3 |
| Sustainable Supply Chain in Reverse Logistics                        | 2 |
| Environmental Needs and Green Transport vs. Sustainable Supply Chain | 2 |
| Trends in Sustainable (Green) Supply Chains                          | 1 |
| Laboratory classes                                                   | 2 |

## VI. Equipment and teaching aids

### Equipment necessary for conducting the classes

1. Multimedia projector or large-format display screen.
2. Instructor computer with presentation capabilities
3. Student workstations or laptops (individual or shared, depending on group size)
4. Stable high-speed internet connection
5. Lecture slides and multimedia presentations

### Suggested teaching methods

1. Interactive lecture supported by multimedia presentation and problem-based discussion.
2. Case study analysis related to sustainable supply chains.
3. Teamwork focused on designing low-emission logistics solutions.
4. Interpretation of environmental data and sustainability indicators.

## VII. Teaching materials

### Primary literature:

1. Koberg E, Longoni A, A systematic review of sustainable supply chain management in global supply chains, Journal of Cleaner Production (2018), doi: <https://doi.org/10.1016/j.jclepro.2018.10.033>
2. Gurzawska, A. (2020). Towards responsible and sustainable supply chains: Innovation, multi-stakeholder approach and governance. Philosophy of Management, 19, 267-295. <https://link.springer.com/article/10.1007/s40926-019-00114-z>
3. Mastos, T. D., Nizamis, A., Terzi, S., Gkortzis, D., Papadopoulos, A., Tsagkalidis, N., & Tzovaras, D. (2021). Introducing an application of an industry 4.0 solution for circular supply chain management. Journal of Cleaner Production, 300, 126886. <https://doi.org/10.1016/j.jclepro.2021.126886>
4. Pawlicka, K., & Bal, M. (2022). Sustainable supply chain finances implementation model and artificial intelligence for innovative omnichannel logistics. Management, 26(1), 19-35. <http://dx.doi.org/10.2478/manment-2019-0082>



### Supplementary literature:

1. Cole, R., & Aitken, J. (2020). The role of intermediaries in establishing a sustainable supply chain. *Journal of Purchasing and Supply Management*, 26(2), 100533. <https://doi.org/10.1016/j.pursup.2019.04.001>
2. Brun, A., Karaosman, H., & Barresi, T. (2020). Supply chain collaboration for transparency. *Sustainability*, 12(11), 4429. <https://doi.org/10.3390/su12114429>
3. Longo, S., Cellura, M., Cusenza, M. A., Guarino, F., Mistretta, M., Panno, D., ... & Ferraro, M. (2021). Life cycle assessment for supporting eco-design: The case study of sodium–nickel chloride cells. *Energies*, 14(7), 1897. <https://doi.org/10.3390/en14071897>

### VIII. Verification and evaluation of achieved learning outcomes

| Form of assessment                            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Share in the final mark (%) |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| Written test – single-choice closed questions | <p>A test verifying theoretical knowledge related to sustainable supply chains, green logistics, ESG, LCA and green transport.</p> <p>During the classes, students receive all information. To get a satisfying mark for evaluation student must take the exam. The final grade is the arithmetic mean of the final examination.</p> <p>Each question is worth 1 point - a maximum of 30 points can be obtained.</p> <p>Assessment:</p> <ul style="list-style-type: none"> <li>• 29 to 30 points – very good 5.0</li> <li>• 26 to 28 points – good plus 4.5</li> <li>• 23 to 25 points – good 4.0</li> <li>• 20 to 22 points – satisfactory plus 3.5</li> <li>• 16 to 19 points – satisfactory 3.0</li> <li>• 0 to 15 points –</li> </ul> | 100%                        |



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|  |                    |  |
|--|--------------------|--|
|  | unsatisfactory 2.0 |  |
|--|--------------------|--|

## IX. Certificate template

Project title: "Development of intensive international education programmes and their implementation as an element of the development of university offers"

Project number: BPI/SPI/2024/1/00017

Name of Polish coordinating institution contracted with NAWA: The International University of Logistics and Transport in Wrocław

### CERTIFICATE / CONFIRMATION of completion

| Name of learning activity<br>(forms of support):           | Purpose of activity (forms<br>of support):                                                                                                                               | Method of implementation:                                                                                                                                   |
|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sustainable Supply Chains – intensive international course | Development of knowledge, skills, and competences in sustainable supply chain management, green logistics, and low-emission transformation in the international economy. | Participation in an intensive international educational programme including lectures, case study analysis, project tasks, teamwork, and laboratory classes. |

Emily Smith, born 15.03.1997

.....  
[participant identification: name and surname, date of birth].

Organiser / Institution awarding the certificate  
The International University of Logistics and Transport in Wrocław  
[Name of institution].



| <p>Duration of the educational activity</p> <p>from: ..... until:</p> <p>.....</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>Workload:</p> <p>30 teaching hours</p> <p>.....</p> <p>[Number of teaching hours or other units of workload]</p>                                                                                                                                              |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name of the competences acquired (developed)                                       | Description of the learning outcomes for individual competences<br>[broken down into: knowledge, skills, social competences for each competence].                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Assessment criteria:                                                                                                                                                                                                                                             |
| 1. Sustainable supply chain management                                             | <p><b>Knowledge:</b></p> <p>Knows and understands the structure, processes, and environmental and social conditions of sustainable supply chains, including ESG, LCA, green transport, and circular economy.</p> <p><b>Skills:</b></p> <p>Is able to analyse supply chain performance, interpret environmental indicators, propose low-emission solutions, and present analytical results in an international environment.</p> <p><b>Social competences:</b></p> <p>Is prepared to make responsible decisions considering environmental and social aspects and to cooperate in international teams.</p> | <ol style="list-style-type: none"> <li>1. Correctly explains key concepts and relationships related to sustainable supply chains.</li> <li>2. Applies analytical tools and proposes appropriate low-emission logistics solutions in case-based tasks.</li> </ol> |
| 2. Analysis and design of logistics solutions                                      | <p><b>Knowledge:</b></p> <p>Understands methods for assessing the environmental performance of logistics processes and the role of technological innovation in supply chain transformation.</p> <p><b>Skills:</b></p> <p>Is able to develop a concept of a sustainable logistics solution using data, analytical tools, and a project-based approach.</p> <p><b>Social Competence:</b></p>                                                                                                                                                                                                              | <ol style="list-style-type: none"> <li>1. Develops a coherent and feasible concept of a sustainable logistics solution based on provided data or a case study.</li> <li>2. Justifies proposed decisions and</li> </ol>                                           |



|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                   |                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Demonstrates responsibility for the quality of proposed solutions and readiness for continuous professional development in sustainable logistics. | demonstrates awareness of environmental and organisational impacts. |
| <p style="text-align: center;"><b>Confirmation of the validation of learning outcomes:</b></p> <p>I hereby confirm that the validation/evaluation of the learning outcomes has been carried out in a way that is appropriate to the competences acquired, respecting the principles that ensure the separation of the learning process from the validation (the person verifying the learning outcomes was not the person providing the training).</p> <p>During the classes, students receive all information. The Final Mark is based on 100% Exam – written form.</p> <p>Assessment:</p> <ul style="list-style-type: none"> <li>• 29 to 30 points – very good 5.0</li> <li>• 26 to 28 points – good plus 4.5</li> <li>• 23 to 25 points – good 4.0</li> <li>• 20 to 22 points – satisfactory plus 3.5</li> <li>• 16 to 19 points – satisfactory 3.0</li> <li>• 0 to 15 points – unsatisfactory 2.0</li> </ul> <p>On.....(date), student received ..... points on the exam. The final grade is.....</p> |                                                                                                                                                   |                                                                     |