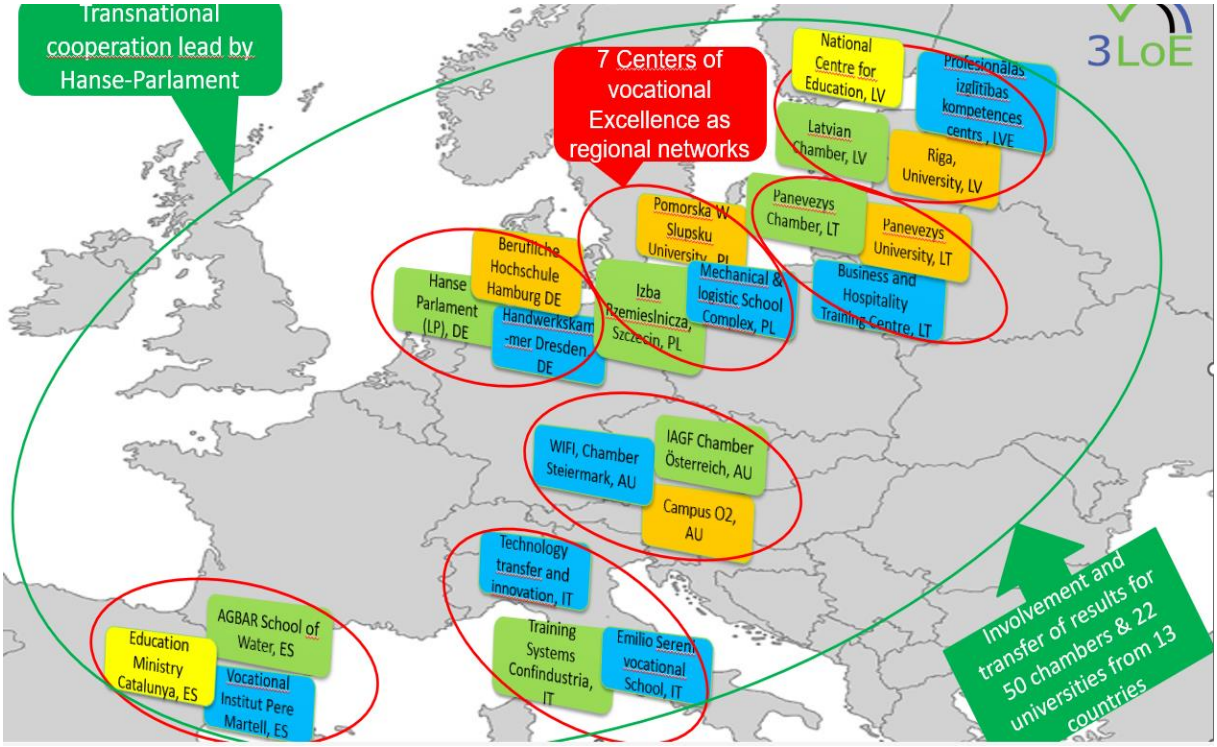
Result 5.6

Dual Bachelor program

“Logistics - Green Supply Chains”

Developed by Pomeranian University in Słupsk (Uniwersytet Pomorski w Słupsku)

Partner



Language

English

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Summary of the Project and Introduction

1. About the 3LOE project

Around 99% of all EU businesses are SMEs, creating up to 70% of all jobs. In general, SMEs have good growth prospects for the future and are particularly well equipped to solve environmental problems and to enhance the green economy. However, in most of the project countries, SMEs are confronted with a shortage of skilled workers and young entrepreneurs. This shortage of skilled workers is even more alarming taking into account that due to aging of current entrepreneurs, a large and growing number of companies will have to be handed over to the next generation. Furthermore, young specialists and entrepreneurs often lack the qualifications and skills needed in order to respond to contemporary developments in the fields of energy, climate and environmental protection. The following problems have been identified in SMEs working in the fields of green economy, energy and environmental protection:

- Blatant and growing shortage of skilled workers.
- Large qualification deficits, especially in the Green Economy.
- Loss of attractiveness and low qualification of school-based VET.
- Low rates of further training and insufficient orientation of offers to SME needs.
- Ageing of entrepreneurs and increasing shortage of young people (demographic change).
- Failure of business transfers and low rates of business start-ups.
- Low innovation rates and insufficient productivity.
- Not enough cooperation between universities and SMEs and a lack of teaching geared to SME needs.
- Comparably low internationalization of SMEs and vocational training providers.
- Lack of national level support for SMEs".

To meet these challenges, work-based learning and new paths in vocational training must be provided through cooperation between educational institutions, economic chambers and SMEs. University graduates are often well-qualified in theory, but lack practical knowledge, skills and abilities that are crucial for SMEs. For this reason, VET reforms must also involve higher education, and should implement dual bachelor's degree programs that combine a bachelor's degree with vocational training and on-sight work in companies.

In the 3LOE project, an innovative and complex project structure with 22 project partners from 7 countries as well as 60 associated partners from 13 countries was designed. In each country, centers of vocational excellence (COVEs) in Green Economy will be established, managed and their permanent continuation ensured. A transnational cooperation of the centers will be developed, extended to 60 education stakeholders from 13 countries and operated permanently in an institutionalized form. The centers will offer a wide range of dual education measures in vocational training, further education and higher education, that are being developed, tested and evaluated in the project. These educational measures on EQF levels 3-7 focus on Green Economy, Digitalization and Entrepreneurship. Furthermore, vocational and educational consulting and innovation support for SMEs will be developed and implemented. In total,

seven Train-the-Trainer programs will be developed and implemented permanently by the project partners. All results will be transferred to the 60 associated partners together with implementation advice.

The objectives and aimed outcomes of the 3LOE project can be summarized as following:

1. Foundation of a three-level Center in each project country

1.1 Building the "Green Economy" skills alliance for qualifications in SMEs with educational and economic actors from the 7 project countries; development of information and cooperation tools.
1.2 Expansion of the skills alliance to the 60 associated partners from 13 countries, comprising chambers of commerce, SME associations, as well as universities of applied sciences/colleges.
1.3 Development, testing and evaluation of a curriculum and teaching materials for Train the Trainer courses for personnel and center management (vocational schoolteachers, trainers in SMEs and lecturers in further and higher education institutions).
1.4 Evaluation of the construction and operation of the seven centers of Excellence and of the transnational cooperation.
1.5 Development of business and financing plans and ensuring the long-term continuation of the seven centres and transnational cooperation.
1.6 Development, consulting and introduction of political strategy program.

2. Implementation and realization vocational training

2.1 Development and implementation of a tool for vocational and qualification counselling as well as a training for consultants and teachers to use the tool.
2.2 Implementation of the dual system, so that work-based learning is put into practice in the project countries.
Preparation and transfer of curricula and examination regulations for dual vocational training for different professions and implementations in Poland, Lithuania, Latvia and Spain.
Development, test and implementation Trainings for teachers to conduct dual vocational training as well as Training of trainers in SMEs.
2.3 Development political concept for the training and integration of young people with learning difficulties for young people with learning difficulties (EQF level 3).
Development, test and implementation of a dual vocational training "Specialist for Building Insulation".
2.4 Development, testing and evaluation of education programme, teaching materials and examination regulations for the provision of sector-specific qualifications already during the initial vocational training for stronger learners. Implementation in the dual system, so that work-based learning is put into practice in the project countries.
2.5 Development and implementation five-year technician training „Ecologic Solutions in Logistics".

3. Implementation and realization of further vocational training

3.1 Development and implementation of concepts and instruments for the management of continuing vocational training.
3.2 Development, test and implementation of a Train-the-Trainer program for teachers to conduct further training.
3.3 Development and implementation of a concept "SME-fair digitalization" as well as development, test and implementation of two train the trainer programs "Basic and advanced digital skills".
3.4 Transfer and implementation of four further trainings Energy Saving and Renewable Energies.
3.5 Preparation, transfer and implementation of six further trainings in the Green Economy.
3.6 Development, testing and evaluation of different training programs and teaching material for owners, managers and qualified workers of SMEs (EQF level 5 and 6). The trainings are specifically tailored to SME needs and different qualification levels and combine the transfer of technical, professional and management know-how.
- Training Enterprise and Entrepreneurship in Green Economy
- Training Energy Service Manager
- Trainings vocational Master Carpenter and Electric
- Training Construction Technician
- Training Service Technician
- Training Sustainability in foodservice industry

3.7 Development of regulations for new continuing education occupational profiles with a focus on the green economy.
3.8 Development of an integration programme for the unemployed (EQF level 4) in order to be able to place the unemployed in permanent jobs through further training seminars and a further training qualification.

4. Implementation and realization of higher education

4.1 Preparation and transfer of curricula, evaluation and examination regulations for two existing dual Bachelor degree programmes "Management of Renewable Building Energy Technology" and "Business Administration for SMEs".
4.2 Development and beginning of implementation of new dual Bachelor degree programs
- Business Administration & Sustainable Management of SMEs
- Entrepreneurship and Innovation in Green Economy
- Logistics - Green Supply Chains
- Service technician
- Tutorial "Sustainable management Climate neutrality for companies"

4.3 Development, test and implementation of four study modules (EQF level 6) on SME management in the Green Economy sector, which will be carried out in the dual study system and integrated into existing Bachelor degree programmes.
4.4 Development and implementation of concept for innovation promotion Solutions for manageable R&D tasks of SMEs and conducting manageable R&D projects for SMEs-

4.5 Development, testing and implementation of Training program for university lecturers and SME advisors.

5. Dissemination, transfer and use of the project results

5.1 Development of a concept and summary evaluation of the dissemination results of all partners
5.2Transfer of all educational measures to 60 educational institutions in 13 countries and needs-oriented implementation consultations as well as realization of a bundle of measures for further dissemination of the project results.
5.3 Further dissemination activities such as presentations online, at third-party events, press releases and conferences.
5.4 Book with all results of the project and distribution via book trade.

For each of the three levels of educational measures there will be:

- Target-group-specific educational programs.
- Curricula, teaching materials, etc. developed in a leading role by the educational institutions of the respective level, whereby the educational institutions of the other levels (in particular universities) participate in an advisory and supportive manner.
- Representatives of the participant target groups involved in the development work.

All educational measures will be tested with the respective target groups under different national conditions in the countries, evaluated and completed on the basis of the evaluation results with application notes.

2. About the Dual Bachelor program “Logistics - Green Supply Chains”

During the first six months of the project, all partners of the seven COVEs discussed and agreed in detail that:
a) dual Bachelor's degree programmes should be developed and implemented.
b) the following existing dual Bachelor's degree programmes should be developed and transferred to all seven COVEs
- Management of Renewable Building Energy Technology
- Business Administration for SMEs
- Four study modules "Green Economy"
c) a new dual Bachelor's degree programme "Business Administration & Sustainable Management of SMEs" is to be developed.

This work was carried out, implementation was advised, and realisation began in all COVEs during the project period.

After the seven COVEs had started their work, they were confronted with urgent needs and requests for the development and implementation of further dual study programmes from public administrations, colleges, universities and companies in the countries that had not yet implemented dual study programmes from the second year

of the project. In order to meet these priority needs in the regions; the development and implementation of the following dual study programmes was also included in the work of the 3LOE project:

- COVE Latvia: Entrepreneurship & Innovation in Green Economy
- Cove Poland: Logistics - Green Supply Chains
- COVE Austria: Service technician
- COVE Austria: Sustainable management Climate neutrality for companies

As the work could only begin in the second year of the project and the development work and necessary accreditations were very labour-intensive and time-consuming, it was only possible to begin with the first implementations during the project period. However, the further implementation of all four additional study programmes is guaranteed after the end of the project period. In addition, all documents relating to the four additional degree programmes were transferred to all other COVEs during the project period and implementation was discussed and prepared here.

The results achieved by COVE Poland for the dual study programme " Logistics - Green Supply Chains" during the project period are presented below.

Concept and Curriculum " Logistics - Green Supply Chains"[1]

1. Overview

The 3LoE project aims to promote a variety of educational measures aimed at training future specialists in the green economy. One of the most efficient ways in which this can be achieved at tertiary (university) level is through the implementation of specifically designed study programs. However, the manner of implementation in a specific university depends on the needs of the local job market as well as the legal environment in which a given higher education institution (HEI) operates. The latter means that existing curricula, which had been adopted and implemented in HEIs operating in some countries, could not be easily adopted and implemented in other countries.

Upon a thorough analysis of the legal situation in Poland as well as the job market environment in the Pomerania Region, the project team at Pomeranian University in Słupsk decided to develop its own dual Bachelor's study program: **Logistics - Green Supply Chains**. The dual study system would be the first of its kind implemented at this University. It was also decided that the students would be employees of local companies who wanted to improve their qualifications.

The programme was developed in the first project year, and implemented as of 1 October 2022, with the graduation envisaged by **30 September 2025**. The implemented programme is a **three-year Bachelor's practical study programme (6 semesters).** The programme adopted, namely Logistics - Green Supply Chains constitutes the so-called study path (or 'specialisation'), which means that the official verification and adoption at the university level was subject to university internal Quality Assurance Procedures and did not need to be approved by the Ministry of Higher Education and Science in Poland.

2. Background

The decision to develop a new dual study programme, rather than implement any of the existing dual study programmes was consequent upon the analysis of the legal situation in Poland and the analysis of risks and opportunities undertaken by the university project group.

The legal provisions regarding the implementation of dual study programmes are very general and outlined in Article 62 of the Act - Law on Higher Education of 20 July 2018 (as amended). The Article reads: "The university may conduct dual studies, which are practical profile studies carried out with the participation of an employer. The organisation of the studies is defined by an agreement concluded in writing." This general provision did not specify a number of details necessary to start such studies, including the scope of contribution of each partner (especially that of the employer) in the entire study programme. This element is extremely important due to the fact that the law

[1] The curriculum is available in English and Polish.

requires a precise calculation of the ECTS points (and hence teachers' and students' hourly contribution) in the newly developed study programme.

The university project team therefore turned to the Ministry of Higher Education and Science with a request to clarify the requirements. However, the Ministry did not provide any specific solution (or guidance), the main rationale being that any specific solutions need to be agreed on, and stipulated by, the two parties in a written agreement.

To this end, the university project team-initiated programme development, the first step being the search for potential business partners willing to implement the dual study programme with Pomeranian University in Słupsk. The Słupsk Chamber of Industry and Trade provided assistance in the process, by addressing direct questions through internal communication channels, but also through organising direct one-to-one meetings.

Finally, two companies decided to cooperate with Pomeranian University in Słupsk in the Development and Implementation of a dual study programme. The two companies are: Markos sp. z o.o. and Mowi Poland S.A. The companies showed a great interest in the studies and were ready to implement flexible working hours for its employees (in particular, Markos sp. z o.o.).

Along with the experts from the university, the representatives of the companies worked together to develop a comprehensive study programme. The basis for the new dual study programme was the existing Bachelor's programme in Logistics. The decision not to develop an independent study programme was dictated by the fact that the development and implementation of the so-called study path (formerly known as "specialisation") would be much easier and quicker, allowing for a highly flexible approach, if need be. Needless to say, the implementation of the study path takes approximately 4-6 months, while an independent study programme requires (in majors where no research evaluation is undertaken) the verification and approval of the Ministry of Higher Education and Science - a process that may take up to 12 months.

The decision to focus on logistics as the study major was the consequence of the lack of specialists in the field on the local job market. This was indicated by numerous reports, including a report developed by Invest in Pomerania[2] (2021) bt also included in the Strategy of Pomorskie Voivodeship till 2030 (2022; see page 37, 42, 46, 57, 59, 66, 112, 117-119 of the Strategy Document[3]). The Green Supply Chain study path was chosen to meet the current challenges of the global economy in finding sustainable solutions to the existing issues, including in logistics.

[2] https://edukacja.gdynia.pl/poradnik-zawodowca-priorytetowe-branze-w-wojewodztwie-pomorskim/
[3] https://strategia2030.pomorskie.eu/wp-content/uploads/2021/06/Zalacznik-do-uchwaly_SWP_376_XXXI_21_SRWP2030_120421.pdf

The study programme was successfully developed and verified by the university Quality Assurance Board, and adopted by the Senate of the University (Resolution of the Senate of Pomeranian University in Słupsk, No. R.000.23.22 of 25 May 2022)[4].

The entire study programme of Logistics, including the study part Logistics- Green Supply Chains - is available from this link [LINK][5]

In this document, only the rudimentary elements related to the specific study path "Green Supply chains" will be presented and elaborated on in detail (below).

3. Dual Bachelor's Study Programme: Logistics - Green Supply Chains

The dual Bachelor's Study Programme: Logistics - Green Supply chains is realized as a study path, or in former nomenclature - a specialisation, at the Logistics programme.

The study programme in question is a **full-time, first-cycle (Bachelor's) degree programme, realising the practical profile**. Students do not pay any tuition fee for attending the programme. The entire programme requires the student to obtain **180 ETCS points in total.** The graduates obtain the professional title of a Bachelor (BA).

The programme belongs to the scientific field of "Management and Quality Sciences" (89% of the ECTS points, i.e. 161), and the scientific field of "Economics and Finances" (11% of the ECTS points, i.e. 19).

A graduate of the first-cycle studies in "Logistics" is characterised by:

1. Knowledge of the theoretical, interdisciplinary foundations of modern logistics management in the phases of supply, production, and distribution; cost, finance, and capital management in the TSL sector; methods, tools, and techniques of logistics management; socio-cultural and mathematical-statistical foundations of business; social, legal, and economic conditions of logistics processes both in the domestic and international market, as well as specialised knowledge in the field of study chosen during the course of studies.
2. The ability to critically analyse, interpret, and evaluate facts and expert opinions regarding logistics management; conduct logistics documentation, create control procedures, perform process analysis, and resolve arising issues; practically apply the knowledge acquired during studies in work within the business sector; forecast and conduct business simulations, use international, EU, and national law standards in transport and logistics activities; lead a team, self-present, conduct business negotiations; prepare written works and oral presentations in Polish and a chosen foreign language, following scientific rules, covering the

[4] http://bip.apsl.edu.pl/uchwala/16021/uchwala-nr-r-000-23-22
[5] http://bip.apsl.edu.pl/attachments/download/16556

broadly understood issues of logistics management; collaborate in teams formed to solve problems related to various aspects of logistics management.

3. Social competencies in the area of lifelong self-education, as well as organising the learning process from others using various sources and tools, including ICT technologies; behaving professionally and ethically; developing the achievements of the profession and undertaking actions to promote best practices; critically receiving content and thinking and acting in an entrepreneurial and innovative manner.

Furthermore, graduates are characterised by detailed knowledge and skills resulting from the choice of education in the following study paths (specialisations):

Green Supply Chains

- Knowledge of the essence of eco-innovation in logistics,
- Understanding of the concept of a sustainable supply chain,
- Familiarity with intelligent transportation systems,
- Ability to manage logistics projects,
- Skill in designing eco-logistics processes and systems,
- Competence in creating market and financial strategies in the logistics chain,
- Proficiency in applying lean management in logistics enterprises,
- Capability to create green supply chains in reverse logistics.

Due to the practical profile of education, students will receive full institutional support in finding valuable internship placements: in logistics, freight forwarding, and transportation companies.

Learning outcomes

Learning outcomes in the field of Logistics with a focus on Green Supply Chains are primarily directed at the socio-economic, institutional-structural, and subject-functional aspects of management in the broadly understood TSL sector. They cover issues that influence the making of rational decisions and the efficient functioning of logistics organisations, as well as the broadly understood conditions and problems related to green supply chains.

EFFECT NUMBER FOR MAJOR	LEARNING OUTCOMES FOR DUAL PEOPLE FIRST DEGREE STUDIES, PRACTICAL PROFILE, FIELD OF STUDY: LOGISTICS STUDY PATH: GREEN SUPPLY CHAINS
KNOWLEDGE: the graduate knows and understands	
K1_W01	terminology used in transport and logistics, as well as theories explaining the mechanisms of the functioning of the economy and the market

K1_W02	advanced principles of operation of logistics systems and processes and relationships between structures, entities and institutions of the supply chain
K1_W03	basic concepts and principles of industrial property protection, copyright and professional ethics, knows the basic legal provisions applicable to running a business
K1_W04	advanced mechanisms, principles and laws of transport economics and the specificity of the functioning of transport and forwarding processes of various forms of transport in national and international terms
K1_W05	the impact of logistics processes on the natural environment and knows methods of pro-ecological management
K1_W06	the role, importance and standards of quality management in logistics, and knows the use of quality improvement methods and tools in logistics management
K1_W07	basic principles of finance and accounting, socio-economic policy, sociology and economics and their impact on logistics activities
K1_W08	principles of logistic customer service, marketing and logistics and marketing strategies, market analysis and people management
K1_W09	the essence of supply, production and distribution in management processes, the relationships between them and their importance in shaping the efficiency of the enterprise and the supply chain
K1_W10	has knowledge of commodity and material science, including the properties of goods and the role and tasks of packaging and logistic units in logistics processes
K1_W11	general principles of management of modern entities, including logistics management and basic principles of creating and developing various forms of individual entrepreneurship
K1_W12	concepts, formulas and theories in mathematics and statistics; knows quantitative methods and tools for analysing, improving and modelling logistics processes
K1_W13	concepts in the field of warehouse management, the essence of managing and designing logistics infrastructure, as well as the principles of selecting and operating warehouse equipment
K1_W14	organisational and technical-technological aspects of the functioning of transport and logistics processes and systems, and has knowledge of the principles and tools of designing and managing these systems
SKILLS: the graduate can	
K1_U01	based on experience gained in an environment professionally dealing with logistics activities**,** observe, analyse, diagnose and interpret phenomena occurring in logistics and supply chains
K1_U02	has basic research skills enabling the construction of simple research and analyzes in the area of management, transport, logistics and green supply chains; is able to

	formulate conclusions, develop and present results, and indicate directions for further research
K1_U03	based on experience gained in an environment professionally dealing with logistics activities, express precisely and coherently, both orally and in writing, on selected issues related to supply chain management using various theoretical approaches, drawing on the achievements of logistics, management, economics and other disciplines; prepares documents and reports in the field of logistics
K1_U04	present your own ideas, doubts and suggestions using specialised language; has developed interpersonal communication skills
K1_U05	based on experience gained in an environment professionally dealing with logistics activities, select and assess the suitability of typical methods, analyses and good practices for implementing tasks and solving problems related to the functioning of logistics processes
K1_U06	formulate and solve complex and unusual problems in the field of transport and logistics and forecast the course and effects of planned activities in conditions of uncertainty and risk
K1_U07	take part in the debate and discuss, presenting and assessing the expressed opinions and positions in the field of logistics management
K1_U08	prepare written presentations using a foreign language, including a specialised logistic one, at level B2 of the Common European Framework of Reference for Languages
K1_U09	prepare oral presentations using a foreign language, including a specialised logistic one, at level B2 of the Common European Framework of Reference for Languages
K1_U10	select and obtain information from professional literature and databases, respecting copyrights, and evaluate, critically analyse and synthesise this information; can interpret legal texts
K1_U11	select and use advanced information and communication techniques and IT systems in the implementation of tasks, assessment of logistic problems and in independent planning and implementation of the idea of continuous education into life practice, including the use of various forms, methods and techniques of effective learning and methods and techniques of personal development in mental and physical spheres
K1_U12	plan and organise your own and teamwork, critically assess its progress and initiate corrective actions
K1_U13	cooperate with other people as part of management and logistics tasks, as well as those of an interdisciplinary nature
K1_U14	plan and implement your own learning independently using various forms of education and continually improve professional skills necessary for your own development
K1_U15	identify and comment on logistics processes, in supply, production and distribution logistics and/or maritime logistics in management processes, in the enterprise

K1_U16	serve min. one software/IT system to support logistics processes, can list and characterise software and operating systems used in supply logistics, production and distribution and/or maritime logistics
SOCIAL COMPETENCES: the graduate is ready to	
K1_K01	continuous professional education and personal development, using various teaching tools in the education process, e.g. tutoring and seeking the opinion of experts in case of difficulties in solving problems on their own; is aware of the level of his knowledge and skills
K1_K02	acting and inspiring others to act for the benefit of local communities and the public interest
K1_K03	behaving in a professional manner and observing professional ethics, notices and formulates moral problems and ethical dilemmas in the field of one's own work and that of others
K1_K04	thinking and acting in an entrepreneurial way, in particular in solving logistics and transport problems
K1_K05	developing the achievements of the profession by taking optimal actions to improve the work of oneself and other people and disseminating good practices
K1_K06	critical evaluation of the received content
K1_K07	taking responsibility for the decisions made

4. Application of the Tutoring Method

According to the Polish Qualifications Framework (NQF), the university's task is to ensure appropriate methods of providing knowledge, educating and improving specific skills and attitudes, as well as ways of verifying them. One of the teaching methods that will be used in the implementation of dual studies in the field of Green Supply Chains is tutoring, which is a personalised education tool[6]. Tutoring is a method of individualised teaching based on the master-student relationship. This method suits the specificity of dual studies through individual care of the student, based on the master-disciple relationship, which, thanks to an integral view of human development, strives for the full development of his potential.[7] The main determinants of this method are its individual nature, situationality, practicality and comprehensiveness of the tools used, holistic approach, reliance on personal relationships, experience and self-awareness.[8]. In practice, academic tutoring is carried out through meetings between the teacher - tutor and the student as part of tutorial meetings. Tutoring includes stages carried out in the following order[9]:

[6] S. Ratajczak, Academic tutoring - benefits for the student, teacher and the university, Culture and Education 2016 No. 3 (113), DOI: 10.15804/kie.2016.03.09 www.kultura-i-edukacja.pl, s. 154–171.

[7] P. Czekierda, What is tutoring? In: P. Czekierda, B. Fingas, M. Szala (ed.), Tutoring. Theory, practice, case studies, Wolters Kluwer, Warsaw 2015, p. 20.

[8] S. Ratajczak, Tutoring …op.cit., s. 154–171.

[9] Ibid.

1. an introductory meeting aimed at presenting the specifics of the method, establishing the principles of cooperation, learning about students' expectations, and setting goals,
2. implementation of tutorials - meetings between the tutor and the student, during which selected scientific issues are discussed based on selected scientific publications and an essay prepared by the student,
3. student's independent work - work done between tutorials, studying literature, preparing an essay,
4. summary meeting - discussion of the course and effects of the tutoring process, providing mutual feedback.

Tutoring benefits the student, the teacher and the university. In the context of the educational outcomes described in the NQF, tutoring ensures the integral development of the student because it allows the transfer of knowledge and the improvement of skills and social competences.

The dual component

The number of ECTS points as well as the workload on the part of companies was the subject of negotiations and is an optimal compromise.

The programme is part of the implementation of the international project - 3LoE "Three-level Centers of Professional Excellence: Qualification, Entrepreneurship and Innovation in the Green Economy", started in 2021. As of the academic year 2022/2023, a full-time Logistics programme was expanded to include the "Green Supply Chains" study path (specialisation). Students admitted to the study path have the opportunity to study in a dual education format, which is a modern model that combines traditional academic classes with professional work. Completing the dual education programme allows students to acquire theoretical knowledge at the university and practical knowledge in a specific enterprise. Dual education involves the implementation of specialised classes with the direct participation of an enterprise (company).

In the framework of specialised subjects, theoretical classes (lectures, seminars) are conducted at Pomeranian University in Słupsk with the participation of academic teachers, while practical classes (workshop classes, labs, practical skill exercises) ake place on the premises of a company and are conducted by designated employees of the enterprise. These designated employees are able to conduct practical classes with students after receiving didactic training prepared by Pomeranian University staff. Each specialised class, regardless of the place of education, is assigned to a designated academic teacher, who maintains regular contact with the enterprise employee conducting the practical classes. The designated university teacher is also responsible for all documentation related to the class.

The share of time a student realises at university premises and in company is as follows:

60% at university premises

40% at a company.

Regarding the teaching hours and the obligatory component of traineeship, the share is the following:

1654 hours - at university,

165 hours - specialised component at a company,

750 hours - traineeship in a company.

General subjects taught to all students majoring in "Logistics"

Fundamentals of Logistics
Supply Chain Management
Transport Economics
Warehouse Management
Logistics Infrastructure
Production Logistics
Procurement Logistics
Commodity Science
Information Systems in Logistics
Distribution Logistics
Modelling of Logistics Processes and Systems
Quality Management in Logistics
Analysis of the TSL Market
Logistics Controlling
Ecology in Logistics

Specialised subjects taught specifically at the "Green Supply Chains" study path within the Logistics programme:

1. Green Supply Chains
2. Internet of Things and Artificial Intelligence in Logistics Processes
3. Mapping and IT Support of Logistics Processes
4. Reverse Logistics and Circular Economy
5. Lean Management in Logistics
6. Risk Management in Logistics Projects
7. Environmental Certification in Logistics
8. Research and Development Projects
9. Supplementary Seminar

These subjects are included in the curriculum and will be conducted in both theoretical and practical settings, in collaboration with academic staff and enterprise professionals.

The dual component starts after the completion of the first three semesters, and is realised in semester 4, 5 and 6, according to the following scheme (classes realised at the company):

Fourth Semester:

- Green Supply Chains (15 hours)
- Internet of Things and Artificial Intelligence in Logistics Processes (15 hours)
- Mapping and IT Support of Logistics Processes (15 hours)

Fifth Semester:

- Reverse Logistics and Circular Economy (15 hours)
- Lean Management in Logistics (15 hours)
- Risk Management in Logistics Projects (15 hours)
- Environmental Certification in Logistics (15 hours)
- Research and Development Projects (15 hours)

Sixth Semester:

- Supplementary Seminar (15 hours)
- Practical classes and projects in enterprises (30 hours)

Total: 165 hours

Methods of Verification and Evaluation of Learning Outcomes Achieved by Students

Verification of learning outcomes will be conducted in accordance with the procedures specified for the Internal Quality Assurance System of Education at various stages of education through:

a) Ongoing assessment of student work during classes (projects, presentations, written assignments, reports, and practical work activity, etc.), b) Graded assessments of individual subjects through colloquia (tests, written work, etc.), c) Subject exams, d) Internships and placements, e) Evaluation of diploma theses, f) Final diploma exam, g) Reports from teachers on the implementation of individual subjects (according to the format required by the Department of Management), h) Course evaluation surveys (according to the format required by the Institute of National Security), i) Results of class observations.

For the evaluation of the program, the verification of learning outcomes also includes:

a) Opinions of internship supervisors, b) Opinions of year supervisors, c) Opinion of the internship coordinator, d) Opinions of students submitted by their representatives, e) Opinions of external and internal stakeholders, f) Results of alumni career tracking.

Verification encompasses all categories of outcomes achieved by students (knowledge, skills, and social competencies). Detailed methods for verifying subject-specific learning outcomes are outlined in course descriptions prepared according to the format required by Pomeranian University (Regulation No. R.021.06.19 of the Rector of Pomeranian University in Słupsk dated January 19, 2019, on the principles of designing education programs in accordance with the Polish Qualifications Framework for Higher Education at Pomeranian University in Słupsk). This documentation specifies the methods for assessing each learning outcome listed for the courses and defines the conditions for their completion. The verification of individual learning outcomes adheres to the organisational principles of the educational process specified in the Study Regulations of Pomeranian University in Słupsk (Resolution No. R.000.12.22 of the Senate of Pomeranian University in Słupsk dated June 19, 2019, on the adoption of the Study Regulations of Pomeranian University in Słupsk).

The method of verifying learning outcomes achieved during professional practice is specified by the Internship Regulations and program documentation. The Internship Regulations were developed according to the principles in force at Pomeranian University in Słupsk.

The process of verifying learning outcomes through the final project and diploma exam is specified in the diploma regulations contained in the Study Regulations of Pomeranian University in Słupsk (Resolution No. R.000.12.22 dated March 30, 2022).

5. Programme details

SUBJECTS			Number of teaching hours																	ECTS POINTS							Evaluation type
			Classroom hours													Student work						ECTS (details)					
			Theoretical classes				Practical classes										incl.											
No.	COURSE	TOTAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	TOTAL	15	16	17	Total hours class+student	Total ECTS	18	19	20	21	22	
Subjects common to all study paths/ specialisations, general subjects																												
SEMESTR I																												
BHP.	Health and safety	4	4	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	Z
P.1.	Mathematics	60	30	30	-	-	30	30	-	-	-	-	-	-	-	-	40	20	20	-	100	4	2	2	-	-	-	ZO
P.2.	Macro- and microeconomics	60	30	30	-	-	30	30	-	-	-	-	-	-	-	-	40	20	20	-	100	4	2	2	-	-	-	E
P.3.	Fundamentals of Law	30	15	15	-	-	15	15	-	-	-	-	-	-	-	-	45	10	35	-	75	3	1	2	-	-	-	ZO
P.4.	Fundamentals of Managment	30	15	15	-	-	15	15	-	-	-	-	-	-	-	-	45	10	35	-	75	3	1	2	-	-	-	ZO
P.5.	Fundamentals of Marketing	30	15	15	-	-	15	15	-	-	-	-	-	-	-	-	20	10	10	-	50	2	1	1	-	-	-	ZO
P.6.	Work ethics	15	15	-	15	-	-	-	-	-	-	-	-	-	-	-	10	10	-	-	25	1	1	-	-	-	-	ZO
K.1.	Fundamentals of logistics	45	15	15	-	-	30	-	30	-	-	-	-	-	-	-	55	35	20	-	100	4	2	2	-	-	2	E
O.1.	Economic geography	30	15	15	-	-	15	15	-	-	-	-	-	-	-	-	45	10	35	-	75	3	1	2	-	-	-	ZO
O.2.	Foreign language	30	-	-	-	-	30	-	-	-	-	-	-	30	-	-	60	-	60	-	90	3	-	3	-	3	3	ZO
O.3.	ICT	30	-	-	-	-	30	-	-	30	-	-	-	-	-	-	45	-	45	-	75	3	-	3	-	-	3	ZO
O.4.	Physical education	30	-	-	-	-	30	-	-	-	-	30	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-	Z
Total in SEMESTER		394	154	139	15	0	240	120	30	30	0	30	0	30	0	0	405	125	280	0	799	30	11	19	0	3	8	

SUBJECTS			Number of teaching hours																		ECTS POINTS							Evaluation type
			Classroom hours														Student work											
			Theoretical classes				Practical classes											incl.											
No.	COURSE	TOTAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	TOTAL	15	16	17	Total hours class+student	Total ECTS	18	19	20	21	22	
Subjects common to all study paths/ specialisations, general subjects																												
SEMESTR II																												
P.7.	Fundamentals of Accounting	45	15	15	-	-	30	15	-	15	-	-	-	-	-	-	30	10	20	-	75	3	1	2	-	-	2	ZO
P.8.	Statistics and Econometry	60	30	30	-	-	30	-	-	30	-	-	-	-	-	-	40	20	20	-	100	4	2	2	-	-	2	E
K.2.	Supply Chain Management	30	15	15	-	-	15	15	-	-	-	-	-	-	-	-	20	10	10	-	50	2	1	1	-	-	-	E
O.2.	Foreign Language	30	-	-	-	-	30	-	-	-	-	-	-	30	-	-	60	-	60	-	90	3	-	3	-	3	3	ZO
O.4.	Physical Education	30	-	-	-	-	30	-	-	-	-	30	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-	Z
O.5.	Protection of Intellectual and Industry Property	15	15	15	-	-	-	-	-	-	-	-	-	-	-	-	10	10	-	-	25	1	1	-	-	-	-	ZO
O.6.	Psychology	30	30	30	-	-	-	-	-	-	-	-	-	-	-	-	20	20	-	-	50	2	2	-	-	-	-	ZO
PZK.	Traineeship (specialisation-specific)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	375	375	-	-	-	375	15	-	15	-	15	15	ZO
Total in SEMESTER		240	105	105	0	0	135	30	0	45	0	30	0	30	0	375	555	70	110	0	795	30	7	23	0	18	22	

SUBJECTS			Number of teaching hours																		ECTS POINTS							Evaluation type
			Classroom hours														Student work											
			Theoretical classes				Practical classes											incl.			Total hours class+student	Total ECTS	ECTS (details)					
No.	COURSE	TOTAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	TOTAL	15	16	17			18	19	20	21	22	
SEMESTR III																												
K.3.	Economics of transport	45	15	15	-	-	30	-	30	-	-	-	-	-	-	-	55	35	20	-	100	4	2	2	-	-	2	E
K.4.	Warehouse managmenet	45	15	15	-	-	30	-	15	15	-	-	-	-	-	-	55	10	45	-	100	4	1	3	-	-	3	E
K.5.	Logistic infrastructure	30	15	15	-	-	15	15	-	-	-	-	-	-	-	-	45	10	35	-	75	3	1	2	-	-	-	ZO
K.6.	Production logistics	45	15	15	-	-	30	-	15	15	-	-	-	-	-	-	30	10	20	-	75	3	1	2	-	-	2	ZO
K.7.	Supply logistics	30	15	15	-	-	15	-	15	-	-	-	-	-	-	-	45	10	35	-	75	3	1	2	-	-	2	ZO
K.8.	Commodity science	30	15	15	-	-	15	-	15	-	-	-	-	-	-	-	20	10	10	-	50	2	1	1	-	-	1	ZO
O.2.	Foreign language	30	-	-	-	-	30	-	-	-	-	-	-	30	-	-	60	-	60	-	90	3	-	3	-	3	3	ZO
PZ.1.	Elective course (1)	30	15	15	-	-	15	-	15	-	-	-	-	-	-	-	20	10	10	-	50	2	1	1	-	2	1	ZO
PZ.2.	Team management	30	15	15	-	-	15	15	-	-	-	-	-	-	-	-	45	10	35	-	75	3	1	2	-	-	-	ZO
PZ.3.	Economic projects evaluation	30	15	15	-	-	15	15	-	-	-	-	-	-	-	-	45	10	35	-	75	3	1	2	-	-	-	ZO
Total in SEMESTER		**345**	**135**	**135**	**0**	**0**	**210**	**45**	**105**	**30**	**0**	**0**	**0**	**30**	**0**	**0**	**420**	**115**	**305**	**0**	**765**	**30**	**10**	**20**	**0**	**5**	**14**	

SUBJECTS			Number of teaching hours																	ECTS POINTS								Evaluation type
			Classroom hours													Student work												
			Theoretical classes				Practical classes										incl.						ECTS (details)					
No.	COURSE	TOTAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	TOTAL	15	16	17	Total hours class+student	Total ECTS	18	19	20	21	22	
SEMESTR IV																												
K.9.	IT systems in logistics	30	15	15	-	-	15	-	-	15	-	-	-	--	-	-	20	10	10	-	50	2	1	1	-	1	1	ZO
O.2.	Foreign language	30	-	-	-	-	30	-	-	-	-	-	-	30	-	-	60	-	60	-	90	3	-	3	-	3	3	E
PZ.4.	Etiquette and self-presentation	15	-	-	-	-	15	-	15	-	-	-	-	-	-	-	10	-	10	-	25	1	-	1	-	-	1	ZO
PZ.5.	Negotiations and Business Communication	30	15	-	15	-	15	-	15	-	-	-	-	-	-	-	20	10	10	-	50	2	1	1	-	-	1	ZO
TOTAL in Semester		105	30	15	15	0	75	0	30	15	0	0	0	30	0	0	110	20	90	0	215	8	2	6	0	4	6	

SUBJECTS			Number of teaching hours																	ECTS POINTS								Evaluation type
			Classroom hours													Student work												
			Theoretical classes				Practical classes										incl.						ECTS (details)					
No.	COURSE	TOTAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	TOTAL	15	16	17	Total hours class+student	Total ECTS	18	19	20	21	22	
SEMESTR V																												
K.10.	Distribution logistics	30	15	15	-	-	15	-	15	-	-	-	-	-	-	-	20	10	10	-	50	2	1	1	-	-	1	ZO
K.11.	Modelling of logistic processes and systems	45	15	15	-	-	30	-	-	30	-	-	-	-	-	-	55	10	45	-	100	4	1	3	-	-	3	ZO
SD.	Bachelor's Seminar	30	-	-	-	-	30	-	-	-	-	-	30	-	-	-	45	-	45	-	75	3	-	3	-	3	3	ZO
TOTAL in Semester		105	30	30	0	0	75	0	15	30	0	0	30	0	0	0	120	20	100	0	225	9	2	7	0	3	7	

SUBJECTS			Number of teaching hours														ECTS POINTS										Evaluation type
			Classroom hours														Student work						ECTS (details)					
			Theoretical classes				Practical classes											incl.			Total hours class+student	Total ECTS						
No.	COURSE	TOTAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	TOTAL	15	16	17			18	19	20	21	22	
SEMESTR VI																												
K.12.	Quality management in logistics	45	15	15	-	-	30	-	15	15	-	-	-	-	-	-	30	10	20	-	75	3	1	2	-	-	2	ZO
K.13.	TSL market analysis	45	15	15	-	-	30	-	15	15	-	-	-	-	-	-	30	10	20	-	75	3	1	2	-	-	2	E
K.14.	Controlling in logistics	30	15	15	-	-	15	-	-	15	-	-	-	-	-	-	45	10	35	-	75	3	1	2	-	-	2	ZO
K.15.	Green solutions in logistics	15	-	-	-	-	15	15	-	-	-	-	-	-	-	-	35	-	35	-	50	2	-	2	-	-	-	ZO
SD.	Bachelor's Seminar	30	-	-	-	-	30	-	-	-	-	-	30	-	-	-	70	-	70	-	100	4	-	4	-	4	4	ZO
PZ.6.	Monographic Lecture	30	-	-	-	-	30	-	30	-	-	-	-	-	-	-	70	-	70	-	100	4	-	4	-	4	4	ZO
PZ.7.	Elective course (2)	30	15	-	15	-	15	-	15	-	-	-	-	-	-	-	20	10	10	-	50	2	1	1	-	2	1	ZO
TOTAL in Semester		225	60	45	15	0	165	15	75	45	0	0	30	0	0	0	300	40	260	0	525	21	4	17	0	10	15	
TOTAL in the programme		1414	514	469	45	0	900	210	255	195	0	60	60	120	0	375	1910	390	1145	0	3324	128	36	92	0	43	72	

SUBJECTS		Number of teaching hours																			ECTS points						Evaluation type
			Classroom hours														Student workload						ECTS (details)					
			Theoretical classes				Practical classes											incl.										
No.	Courses: Green Supply Chains	TOTAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	TOTAL	15	16	17	Total hours class+student	Total ECTS	18	19	20	21	22	
SEMESTR IV																												
S.4.1.	Supplementary Seminar	15	-	-	-	-	15	-	-	-	15	-	-	-	-	-	35	-	35	-	50	2	-	2	-	2	2	ZO
S.4.2.	Green Supply Chains	45	30	-	30	-	15	-	-	-	15	-	-	-	-	-	30	20	10	-	75	3	2	1	-	3	1	E
S.4.3	IoT and AI in logistic processes	30	30	-	30	-	-	-	-	-	-	-	-	-	-	-	20	20	-	-	50	2	2	-	-	2		ZO
PZS.	Traineeship (specialised)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	375	375	-	-	-	375	15	-	15	-	15	15	ZO
	TOTAL in Semester	90	60	0	60	0	30	0	0	0	30	0	0	0	0	375	460	40	45	0	550	22	4	18	0	22	18	
SEMESTR V																												
S.4.1.	Supplementary Seminar	15	-	-	-	-	15	-	-	-	15	-	-	-	-	-	35	-	35	-	50	2	-	2	-	2	2	ZO
S.4.4	Mapping and IT support for logistic processes	45	-	-	-	-	45	-	30	-	15	-	-	-	-	-	80	-	80	-	125	5	-	5	-	5	5	ZO
S.4.5.	Reverse logistics and closed-loop supply chain	45	30	-	30	-	15	-	-	-	15	-	-	-	-	-	80	20	60	-	125	5	2	3	-	5	3	E
S.4.6.	Lean managemenet in logistics	45	30	-	30	-	15	-	-	-	15	-	-	-	-	-	80	20	60	-	125	5	2	3	-	5	3	E
S.4.7.	Environmental certification in logistics	45	30	-	30	-	15	-	-	-	15	-	-	-	-	-	55	20	35	-	100	4	2	2	-	4	2	ZO
	TOTAL in Semester	195	90	0	90	0	105	0	30	0	75	0	0	0	0	0	330	60	270	0	525	21	6	15	0	21	15	
SEMESTR VI																												
S.4.1.	Supplementary seminar	15	-	-	-	-	15	-	-	-	15	-	-	-	-	-	35	-	35	-	50	2	-	2	-	2	2	ZO
S.4.8.	Risk management in logistic projects	60	30	30	-	-	30	-	-	-	30	-	-	-	-	-	65	20	45	-	125	5	2	3	-	5	3	E
S.4.9.	R&D Projects	45	-	-	-	-	45	-	30	-	15	-	-	-	-	-	5	-	5	-	50	2	-	2		2	2	ZO
	TOTAL in Semester	120	30	30	0	0	90	0	30	0	60	0	0	0	0	0	105	20	85	0	225	9	2	7	0	9	7	
TOTAL in study programme		1819	694	499	195	0	1125	210	315	195	165	60	60	120	0	750	2805	510	1545	0	4624	180	48	132	0	95	112	

Legend

1: Theoretical classes (total)

2: Lectures

3: Practical classes

4: E-learning classes

5: Practical classes (total)

6: Discussion classes

7: Workshop classes

8: Lab classes

9: Classes in a company

10: Physical education

11: Bachelor's Degree Seminar

12: Foreign Language Classes

13: E-learning classes

14: Traineeship

15: Student own work: Theoretical classes

16: Student own work: Practical classes

17: Student own work: E-learning classes

18: ECTS: Theoretical classes

19: ECTS: Practical classes

20: ECTS: E-learning classes

21: ECTS: Elective classes

22: ECTS: Classes for practical skill development

EVALUATION TYPES:

ZO - Credit with a Grade

E - Exam

Addendum - Detailed Characteristics of Specialised Subjects

General characteristics of the studies conducted

1.1. Name of the field of study

LOGISTICS

1.2. Level of study

FIRST DEGREE STUDIES

1.3. Study profile

PRACTICAL

1.4. Form of studies

FULL-TIME AND PART-TIME STUDIES

1.5. Number of semesters

6

1.6. The number of ECTS points required to complete studies

180

1.7. Professional title awarded to graduates

BACHELOR DEGREE

Green supply chains – dual education

As part of the implementation of the international project "Three-level Centers of Professional Excellence: Qualification, Entrepreneurship and Innovation in the Green Economy" in 2022, the full-time study program in Logistics has been extended to include the "Green Supply Chains" education path. As part of this path, students will have the opportunity to study in a dual form, which is a modern education model combining traditional academic classes with professional work. Completing studies in the dual education program will allow the student to learn theoretical knowledge at the University and practical knowledge in a specific enterprise. Dual education assumes the implementation of specialized subjects with the direct participation of the enterprise.

As part of specialized subjects, theoretical classes (lectures, seminars) will be held at the Pomeranian University with the participation of academic teachers, and practical classes (workshop exercises, practical skills exercises) will take place on the premises of the company and will be conducted by its designated employees. Designated company employees will be able to conduct practical classes with students after didactic training prepared by AP employees. Each specialized subject, regardless of the place of study, will be assigned to a designated academic teacher who will be in constant contact with an employee of a given company conducting practical classes. The assigned AP teacher will also be responsible for all course-related documentation. The list of detailed specialist subjects, divided by place of education, is presented in the table below.

Specialised courses – SYLLABUSES

Supplementary seminar

Class code and name:		Form of assessment	Number of ECTS points
code	**name**		
S.4.1	Supplementary seminar	CREDIT WITH GRADE	6

Field of study:	Logistics

Characteristics of classes:

study profile	level of study	compulsory classes for the major	elective classes	semester
practical	Bachelor's degree course	NO	not	IV-VI

Discipline:

Management and quality sciences

Name of the unit conducting classes:	People conducting classes:
Department of Management	Persons designated in accordance with the course assignment for a given academic year

Division of learning time taking into account the student's workload:

forms of classes/ student's independent work	number of hours					number of ECTS points
	N (teacher)		S (student)		SUM	
	SS	SNS	SS	SNS		
SEMESTER IV						
Practical classes [total] (PZ)	**15**	-	**-**	-	50	2
● introductory classes	-	-	-	-		
● practical classes at the employer	15	-	-	-		
● individual consultations	-	-	-	-		
● studying literature on the topic of work	-	-	35	-		
Total in the semester:	**15**	**-**	**35**	**-**	**50**	**2**

SEMESTER V						
Practical classes [SUM]	**15**	-	**-**	-	50	2
● introductory classes	-	-	-	-		
● practical classes at the employer	15	-	-	-		
● individual consultations	-	-	-	-		
● studying literature on the topic of work	-	-	35	-		
Total in the semester:	**15**	**-**	**35**	**-**	**50**	**2**
SEMESTER VI						
Practical classes [SUM]	**15**	-	**-**	-	50	2
● introductory classes	-	-	-	-		
● practical classes at the employer	15	-	-	-		
● individual consultations	-	-	-	-		
● studying literature on the topic of work	-	-	35	-		
Total in the semester:	**15**	**-**	**35**	**-**	**50**	**2**
Total during studies:	**45**	**-**	**105**	**-**	**150**	**6**

N – classes with a teacher; S – student's independent work; SS – full-time studies; SNS – part-time studies.

Teaching methods:	
theoretical classes:	**practical:**
● **classes with teachers:**	● **classes with teachers:**
not applicable	Presentation of the issues in practice, discussion, analysis of the situation.
● **student's independent work:**	● **student's independent work:**
not applicable	Learning the content of classes, taking notes, studying literature.

Formal requirements related to admitting students to classes:	
Introductory subjects:	**Entrance requirements:**
none	The student has basic knowledge of logistics, has mastered the ability to express himself orally, is able to use professional literature, and is able to work both independently and in a team;

Subject objectives:

in terms of knowledge:

Get to know students:

- with tasks performed at specific job positions;

in terms of skills:

Teach students:

- carrying out professional tasks using knowledge, skills and social competences acquired during studies;
- compliance with the rules and other regulations (legal, ethical, moral) applicable in the company;
- working in teams of logistics specialists;
- independently solving logistics problems and making decisions in this regard;

in the field of social competences:

Develop students' social competences in the following areas:

- readiness to perform professional tasks in a professional and responsible manner, while maintaining the principles of professional ethics;
- readiness to think and act in an entrepreneurial and innovative way, including taking actions in the field of self-education and personal development;

Education content:

Practical:

topic number	educational content	number of hours SS
SEMESTER IV		
1	Practical skills classes will include content in the field of green supply chains, in particular content regarding the current operation of the company, which will allow you to improve skills related to carrying out professional tasks, observing the rules and other regulations (legal, ethical, moral) in force in the company and working in teams of specialists in the field of logistics. The issues discussed during the classes will be related to the current situation of the company.	15
	Total theoretical classes:	**15**
SEMESTER V		
1	Practical skills classes will include content in the field of green supply chains, in particular content regarding the current operation of the company, which will allow you to improve skills related to carrying out professional tasks, observing the rules and other regulations (legal, ethical, moral) in force in the company and working in teams of specialists in the field of logistics. The issues discussed during the classes will be related to the current situation of the company.	15
	Total theoretical classes:	**15**

practical:

topic number	educational content	number of hours
		SS
SEMESTER VI		
1	Practical skills classes will include content in the field of green supply chains, in particular content regarding the current operation of the company, which will allow you to improve skills related to carrying out professional tasks, observing the rules and other regulations (legal, ethical, moral) in force in the company and working in teams of specialists in the field of logistics. The issues discussed during the classes will be related to the current situation of the company.	15
	Total practical classes:	**15**
	Total classes during studies:	**45**

Attention: the division concerns classes with direct participation of teachers or classes on an e-learning platform.

Abbreviations used: SS – full-time studies; SNS – part-time studies

Learning outcomes:

the category	number	contents
knowledge	**W_01**	knows and understands the impact of logistics processes on the natural environment and knows methods of pro-ecological management in the company;
	W_02	knows and understands the general principles of management of modern entities, including logistics management, and in particular green supply chains;
	W_03	knows and understands organizational and technical-technological aspects of the functioning of logistics processes and systems and has knowledge of the principles and tools of designing and managing these systems;
skills	**U_01**	is able to perform professional tasks in an enterprise based on theoretical knowledge and practical skills acquired during studies;
	U_02	is able to observe, analyze, diagnose and interpret phenomena occurring in logistics and supply chains;
	U_03	is able to express precisely and coherently, both orally and in writing, on selected issues related to supply chain management; prepares documents and reports in the field of logistics;
	U_04	can present own ideas, doubts and suggestions using specialized language; has developed interpersonal communication skills;
	U_05	is able to formulate and solve complex and unusual problems in the field of green supply chains and forecast the course and effects of planned activities in conditions of uncertainty and risk;

	U_06	is able to plan and organize own and team work, critically assess its progress and initiate corrective actions;
social competences	**K_01**	thinking and acting in an entrepreneurial way, in particular in solving problems related to green supply chains;
	K_02	developing the achievements of the profession by taking optimal actions to improve the work of oneself and other people and disseminating good practices;
	K_03	taking responsibility for the decisions made;

Completion of the course/verification of learning outcomes:	
form of assessment:	Pass with grade
pass conditions and criteria:	The condition for passing the course is: ● attendance at practical classes at the employer's; ● activity during practical classes at the employer's.
How to pass the practical classes of the 4th semester:	
final assessment form:	Arithmetic average of grades for attendance and activity at practical classes at the employer's; **<u>Attendance at practical classes at the employer:</u>** grade calculated on the basis of the student's percentage share in the total number of hours of classes planned for the course; **<u>Activity during practical classes at the employer:</u>** grade calculated on the basis of the lecturer's assessment of the frequency of participation in discussions during classes, the substantive level of the statements and the critical approach to the discussed problem;
evaluation criteria:	**<u>Attendance at practical classes at the employer:</u>** ● 5.0 – participation in over 90% of class hours; ● 4.5 – participation from 86 to 90% of class hours; ● 4.0 – participation from 81 to 85% of class hours; ● 3.5 – participation from 76 to 80% of class hours; ● 3.0 – participation from 70 to 75% of class hours; ● 2.0 – participation in less than 70% of class hours; **<u>Activity during practical classes at the employer:</u>** ● 5.0 - the student participated very often in the discussion, the substantive value of his statements was high and he approached the discussed problem critically; ● 4.5 - the student often participated in the discussion, the substantive value of his statements was rather high and he approached the discussed problem rather critically;

<table>
<tr><td></td><td colspan="4">

4.0 - the student often participated in the discussion, the substantive value of his statements was at a relatively good level and he was rather critical of the discussed problem;
3.5 - the student rarely participated in the discussion, the substantive value of his statements was at an average level and he approached the discussed problem rather uncritically;
3.0 - the student participated in the discussion sporadically, the substantive value of his statements was low and he approached the discussed problem uncritically;
2.0 – the student did not participate in the discussions;

</td></tr>
<tr><td rowspan="3">method of calculating the rating
and verification of learning outcomes:</td><td>item</td><td>method of verification</td><td>reference
to effects</td><td>evaluation weight
In %</td></tr>
<tr><td>O1</td><td>Attendance at practical classes at the employer's</td><td>W_01; W_02; W_03; U_01; U_02; U_03; U_04; U_05; U_06; K_01; K_02; K_03</td><td>50</td></tr>
<tr><td>O2</td><td>Activity during practical classes at the employer's</td><td>W_01; W_02; W_03; U_01; U_02; U_03; U_04; U_05; U_06; K_01; K_02; K_03</td><td>50</td></tr>
<tr><td>method of calculating the final grade:</td><td colspan="4">$Op = 0.5xO1 + 0.5xO2$</td></tr>
<tr><td colspan="5">How to pass practical classes in semester V:</td></tr>
<tr><td>final assessment form:</td><td colspan="4">Arithmetic average of grades for attendance and activity at practical classes at the employer's;

<u>Attendance at practical classes at the employer:</u>

grade calculated on the basis of the student's percentage share in the total number of hours of classes planned for the course;

<u>Activity during practical classes at the employer:</u>

grade calculated on the basis of the lecturer's assessment of the frequency of participation in discussions during classes, the substantive level of the statements and the critical approach to the discussed problem;</td></tr>
<tr><td>evaluation criteria:</td><td colspan="4"><u>Attendance at practical classes at the employer:</u>

5.0 – participation in over 90% of class hours;
4.5 – participation from 86 to 90% of class hours;
4.0 – participation from 81 to 85% of class hours;
3.5 – participation from 76 to 80% of class hours;
3.0 – participation from 70 to 75% of class hours;
2.0 – participation in less than 70% of class hours;

</td></tr>
</table>

<table>
<tr><td></td><td colspan="4"><u>Activity during practical classes at the employer:</u>

● 5.0 - the student participated very often in the discussion, the substantive value of his statements was high and he approached the discussed problem critically;
● 4.5 - the student often participated in the discussion, the substantive value of his statements was rather high and he approached the discussed problem rather critically;
● 4.0 - the student often participated in the discussion, the substantive value of his statements was at a relatively good level and he was rather critical of the discussed problem;
● 3.5 - the student rarely participated in the discussion, the substantive value of his statements was at an average level and he approached the discussed problem rather uncritically;
● 3.0 - the student participated in the discussion sporadically, the substantive value of his statements was low and he approached the discussed problem uncritically;
● 2.0 – the student did not participate in the discussions;</td></tr>
<tr><td rowspan="3">method of calculating the rating
and verification of learning outcomes:</td><td>item</td><td>method of verification</td><td>reference
to effects</td><td>evaluation weight
In %</td></tr>
<tr><td>O1</td><td>Attendance at practical classes at the employer's</td><td>W_01; W_02; W_03; U_01; U_02; U_03; U_04; U_05; U_06; K_01; K_02; K_03</td><td>50</td></tr>
<tr><td>O2</td><td>Activity during practical classes at the employer's</td><td>W_01; W_02; W_03; U_01; U_02; U_03; U_04; U_05; U_06; K_01; K_02; K_03</td><td>50</td></tr>
<tr><td>method of calculating the final grade:</td><td colspan="4">$Op = 0.5xO1 + 0.5xO2$</td></tr>
<tr><td colspan="5">How to pass practical classes in the 6th semester:</td></tr>
<tr><td>final assessment form:</td><td colspan="4">Arithmetic average of grades for attendance and activity at practical classes at the employer's;

<u>Attendance at practical classes at the employer:</u>

grade calculated on the basis of the student's percentage share in the total number of hours of classes planned for the course;

<u>Activity during practical classes at the employer:</u>

grade calculated on the basis of the lecturer's assessment of the frequency of participation in discussions during classes, the substantive level of the statements and the critical approach to the discussed problem;</td></tr>
<tr><td>evaluation criteria:</td><td colspan="4"><u>Attendance at practical classes at the employer:</u></td></tr>
</table>

<table>
<tr><td></td><td colspan="4">

5.0 – participation in over 90% of class hours;
4.5 – participation from 86 to 90% of class hours;
4.0 – participation from 81 to 85% of class hours;
3.5 – participation from 76 to 80% of class hours;
3.0 – participation from 70 to 75% of class hours;
2.0 – participation in less than 70% of class hours;

<u>Activity during practical classes at the employer:</u>

5.0 - the student participated very often in the discussion, the substantive value of his statements was high and he approached the discussed problem critically;
4.5 - the student often participated in the discussion, the substantive value of his statements was rather high and he approached the discussed problem rather critically;
4.0 - the student often participated in the discussion, the substantive value of his statements was at a relatively good level and he was rather critical of the discussed problem;
3.5 - the student rarely participated in the discussion, the substantive value of his statements was at an average level and he approached the discussed problem rather uncritically;
3.0 - the student participated in the discussion sporadically, the substantive value of his statements was low and he approached the discussed problem uncritically;
2.0 – the student did not participate in the discussions;

</td></tr>
<tr><td>method of calculating the rating and verification of learning outcomes:</td><td>item</td><td>method of verification</td><td>reference to effects</td><td>evaluation weight In %</td></tr>
<tr><td></td><td>O1</td><td>Attendance at practical classes at the employer's</td><td>W_01; W_02; W_03; U_01; U_02; U_03; U_04; U_05; U_06; K_01; K_02; K_03</td><td>50</td></tr>
<tr><td></td><td>O2</td><td>Activity during practical classes at the employer's</td><td>W_01; W_02; W_03; U_01; U_02; U_03; U_04; U_05; U_06; K_01; K_02; K_03</td><td>50</td></tr>
<tr><td>method of calculating the final grade:</td><td colspan="4">$Op = 0.5xO1 + 0.5xO2$</td></tr>
<tr><td colspan="5">Learning outcomes matrix for classes:</td></tr>
</table>

number (symbol) of the learning outcome	reference to learning outcomes for the field
W_01	K1_W05
W_02	K1_W11
W_03	K1_W14

U_01	K1_U01, K1_U05
U_02	K1_U01
U_03	K1_U03
U_04	K1_U04
U_05	K1_U06
U_05	K1_U12
K_01	K1_K04
K_02	K1_K05
K_03	K1_K07

List of literature:

A. Literature required to finally pass the course (pass the exam):

Contact:	
contact person:	Employee of the IBiZ secretariat
phone:	59 306 76 04 (secretariat)
e-mail:	sekretariat.ibiz@upsl.edu.pl (secretariat)

Green supply chains

Class code and name:		**Form of assessment**	**Number of ECTS points**
code	**name**		
S.4.2.	Green supply chains	EXAM	3

Field of study:	Logistics

Characteristics of classes:

study profile	**level of study**	**compulsory classes for the major**	**elective classes**	**semester**
practical	Bachelor's degree course	NO	not	IV

Discipline:

Management and quality sciences

Name of the unit conducting classes:	**People conducting classes:**

Department of Management	Persons designated in accordance with the course assignment for a given academic year

Division of learning time taking into account the student's workload:

forms of classes/ student's independent work	number of hours					number of ECTS points
	N (teacher)		S (student)		SUM	
	SS	SNS	SS	SNS		
Theoretical classes [total] K 30	**30**	-	**20**	-	50	2
● Introductory classes	**1**	-	-	-		
● Seminars	27	-	-	-		
● Summary classes - presentation of individual work	**2**	-	-	-		
● Studying literature	-	-	15	-		
● Preparation for the exam	-	-	5	-		
Practical classes [total] PZ 15	**15**	-	**10**	-	25	1
● Introductory classes	-	-	-	-		
● Practical exercises at the employer's	15	-	-	-		
● Summary classes - colloquium	-	-	-	-		
● Studying literature	-	-	5	-		
● Preparation of homework	-	-	-	-		
● Preparation for passing	-	-	5	-		
SUM	**45**	-	**30**	-	**75**	**3**

N – classes with a teacher; S – student's independent work; SS – full-time studies; SNS – part-time studies.

Teaching methods:

theoretical classes:	**practical:**
● **classes with teachers:**	● **classes with teachers:**
Presentation of issues, discussion, use of multimedia presentation.	Presentation of the issues in practice, discussion, analysis of the situation.
● **student's independent work:**	● **student's independent work:**

Learning the content of the seminar, taking notes, studying literature, preparing for the exam.	Learning the content of the classes, taking notes, studying literature, preparing for the exam.
Formal requirements related to admitting students to classes:	
Introductory subjects:	**Entrance requirements:**
● none	● the student has basic knowledge of logistics, has mastered the ability to express himself orally, is able to use professional literature, is able to work both independently and in a team;
Subject objectives:	
in terms of knowledge:	
Get to know students: ● with the idea of sustainable development in green economy business models ● with concepts, concepts and methodology in the field of Green supply chains ● with environmental strategies in organizations and supply chains	
in terms of skills:	
Teach students: ● use of green supply chain management instruments ● using modern technologies in managing green supply chains ● building innovative green supply chain strategies	
in the field of social competences:	
Develop students' social competences in the following areas: ● communication with the environment ● Design thinking skills to achieve established business and personal goals ● compliance with ethical, moral and legal principles in professional work	
Education content:	
theoretical classes:	

topic number	educational content	number of hours
		SS
1	Sustainability in green economy business models	1
2	Sustainable development - changes in concepts and management paradigms over the decades	1
3	Environmental strategies in organizations and supply chains	2
4	The concept of green supply chain and green supply chain management	2
5	Economic and environmental goals of a green supply chain	2

6	Competitiveness factors of a sustainable and green supply chain	2
7	Stimulants and destimulants of sustainable supply chain management	2
8	Green supply chain management instruments	2
9	Measuring green supply chain management	2
10	Building a green supply chain – a model approach	2
11	Modern technologies in the management of green supply chains	2
12	Product life cycle and the idea of sustainable development	2
13	Ecologically oriented logistics systems	2
14	Innovative supply chain strategies	2
15	Green supply chains – case studies	3
16	Summary classes	1
	Total theoretical classes:	**30**

practical:

topic number	**educational content**	**number of hours**
		SS
1	Practical skills classes will include content in the field of Green Supply Chains, which will allow you to improve skills related to green supply chain management in professional work - to ensure quality and solve problems in the organization.	15
	Total practical classes:	**15**
	Total theoretical and practical classes:	**45**

Attention: the division concerns classes with direct participation of teachers or classes on an e-learning platform.

Abbreviations used: SS – full-time studies; SNS – part-time studies

Learning outcomes:

the category	**number**	**contents**
knowledge	**W_01**	knows and understands advanced principles of operation of logistics systems and processes as well as the relationships between structures, entities and institutions of the supply chain
	W_02	knows and understands the impact of logistics processes on the natural environment and knows ways of pro-ecological management of the green supply chain

skills	**U_01**	is able to observe, analyze, diagnose and interpret phenomena occurring in logistics and green supply chains
	U_02	has basic research skills enabling the construction of simple research and analyzes in the area of green supply chain management; is able to formulate conclusions, develop and present results, and indicate directions for further research
	U_03	presents own ideas, doubts and suggestions using specialized language; has developed interpersonal communication skills
	U_04	cooperates with other people as part of tasks in the field of green supply chains
social competences	**K_01**	developing the achievements of the profession by taking optimal actions to improve the work of oneself and other people and disseminating good practices
	K_02	thinking and acting in an entrepreneurial way, in particular in solving problems related to the management of green supply chains

Completion of the course/verification of learning outcomes:	
form of assessment:	Exam
pass conditions and criteria:	The condition for passing the course is: ● active participation of students in classes, ● obtaining by students, in accordance with the criteria adopted by the lecturer, a positive grade in theoretical and practical classes, ● obtaining a positive grade in the exam.
method of passing theoretical classes:	
final assessment form:	Independent preparation and performance of an intellectual task in class: a project on a narrow problem with a speech covering a narrow issue using a multimedia presentation.
evaluation criteria:	● 5.0 - the student completed the task in the form specified by the lecturer, and its substantive value is at a high level; ● 4.5 - the student completed the task in the form specified by the lecturer, and its substantive value is rather high, but there were minor shortcomings that do not significantly affect the overall substantive level of the task; ● 4.0 - the student completed the task in the form specified by the lecturer, and its substantive value is rather good, but there are shortcomings that do not significantly affect the overall substantive level of the task; ● 3.5 - the student did not complete the task in the form specified by the lecturer, and its substantive value is rather at a sufficient level, but there are shortcomings that significantly affect the overall substantive level of the task; ● 3.0 - the student completed the task in a form that differed significantly from the form specified by the lecturer, and its substantive value is rather at a sufficient level, but there were shortcomings that significantly affect the overall substantive level of the task; ● 2.0 – the student did not complete the task;

method of calculating the rating	**item**	**method of verification**	**reference to effects**	**evaluation weight In %**

and verification of learning outcomes:	O1	Independent preparation and completion of an intellectual task during classes	W_01; W_02; U_01; U_02; U_03; U_04; K_01; K_02	100%
method of calculating the final grade:	$Ot = O1$			
How to pass practical classes:				
final assessment form:	The grade is calculated based on the lecturer's assessment of the frequency of involvement (participation) in class discussions, the substantive level of the statements and the critical approach to the discussed problem.			
evaluation criteria:	● 5.0 - the student participated very often in the discussion, the substantive value of his statements was high and he approached the problem discussed critically ● 4.5 - the student often participated in the discussion, the substantive value of his statements was rather high and he approached the discussed problem rather critically ● 4.0 - the student often participated in the discussion, the substantive value of his statements was at a relatively good level and he was rather critical of the discussed problem ● 3.5 - the student rarely participated in the discussion, the substantive value of his statements was at an average level and he approached the problem discussed rather uncritically ● 3.0 - the student participated in the discussion sporadically, the substantive value of his statements was low and he approached the discussed problem uncritically ● 2.0 – the student did not participate in the discussions			
method of calculating the rating and verification of learning outcomes:	**item**	**method of verification**	**reference to effects**	**evaluation weight In %**
	O1	Involvement (participation) in discussions during classes, substantive level of statements and critical approach to the discussed problem.	W_01; W_02; U_01; U_02; U_03; U_04; K_01; K_02	100%
method of calculating the final grade:	On = O1			
How to pass the exam:				
final assessment form:	Written exam using single-choice or multiple-choice tests. The grade is calculated based on the percentage of correct answers given by the student in the test prepared by the lecturer.			
evaluation criteria:	● 5.0 – over 90% correct answers to test questions; ● 4.5 – from 86 to 90% of correct answers; ● 4.0 – from 81 to 85% of correct answers; ● 3.5 – from 76 to 80% of correct answers; ● 3.0 – from 70 to 75% of correct answers; ● 2.0 – below 70% correct answers;			

method of passing the course:				
final assessment form:	Weighted average of grades from the exam and for practical and theoretical classes, taking into account the weight of ECTS points.			
method of calculating the rating and verification of learning outcomes:	**item**	**method of verification**	**reference to effects**	**evaluation weight ECTS**
	Ot	Theoretical assessment	W_01; W_02	2
	On	Practical assessment	W_01; W_02; U_01; U_02; U_03; U_04; K_01; K_02	1
	Exam	Exam grade	W_01; W_02; K_01; K_02	-
method of calculating the final grade:	$Ok = 0{,}6xOe + 0{,}4x(Otx2 + Opx1)/3$			

Learning outcomes matrix for classes:

number (symbol) of the learning outcome	reference to learning outcomes for the field
W_01	K1_W02
W_02	K1_W05
U_01	K1_U01
U_02	K1_U02
U_03	K1_U04
U_04	K1_U13
K_01	K1_K05
K_02	K1_K04

List of literature:

A. Literature required to finally pass the course (pass the exam):

- B. Tundys, Green supply chain, CeDeWu, 2018.
- J. Witkowski, Supply chain management. Concepts-procedures-experiences, PWE, Warsaw 2010.
- Harrison, R. Hoek, Logistics Management, PWE, Warsaw, 2010.
- A. Szymonik, Ecologistics, Theory and practice, Difin, Warsaw 2018.

B. Additional literature:

- Szmelter-Jarosz, Logistical aspects of the rational use of IT systems, Wydawnictwo Gospodarstwa Gdańskiego, Gdańsk 2019.
- Vol. Rosik-Dulewska, Basics of waste management, PWN, Warsaw 2015.
- Coffee, Setting Up Your Supply Chain. Theory, instruments and technologies, Poznań University of Economics Publishing House, Poznań 2011.
- M. Hordynska, Ecologistics and waste management, Wydawnictwo Politechniki Śląskiej, Katowice 2017.
- K. Nowicka, "Determinants of the design of sustainable transport development", Scientific Works. Transport z. 117, OWPW, Warsaw 2017.
- K. Nowicka, "Digital technologies as a determinant of the transformation of supply chains", OW SGH, Warsaw 2019.

Contact:	
contact person:	Employee of the IBiZ secretariat
phone:	59 306 76 04 (secretariat)
e-mail:	sekretariat.ibiz@upsl.edu.pl (secretariat)

IoT and AI in logistics processes

Class code and name:		**Form of assessment**	**Number of ECTS points**
code	**name**		
S.4.3.	IoT and AI in logistics processes	CREDIT WITH GRADE	2

Field of study:	Logistics

Characteristics of classes:

study profile	**level of study**	**compulsory classes for the major**	**elective classes**	**semester**
practical	Bachelor's degree course	NO	not	IV

Discipline:

Management and quality sciences

Name of the unit conducting classes:	**People conducting classes:**
Department of Management	Persons designated in accordance with the course assignment for a given academic year

Division of learning time taking into account the student's workload:

forms of classes/ student's independent work	**number of hours**			
	N	**S**	**SUM**	

	(teacher)		(student)			number of ECTS points
	SS	SNS	SS	SNS		
Theoretical classes [total] W30	**30**	-	**20**	-	50	2
● Introductory classes	**2**	-	-	-		
● Lectures	**27**	-	-	-		
● Summary classes - colloquium	**1**	-	-	-		
● Studying literature	-	-	**15**	-		
● Preparation for passing	-	-	**5**	-		
Practical classes [SUM]	-	-	-	-	-	-
● Introductory classes	-	-	-	-		
● Practical exercises at the employer's	-	-	-	-		
● Summary classes - colloquium	-	-	-	-		
● Studying literature	-	-	-	-		
● Preparation of homework	-	-	-	-		
● Preparation for passing	-	-	-	-		
SUM	**30**	-	**20**	-	**50**	**2**

N – classes with a teacher; S – student's independent work; SS – full-time studies; SNS – part-time studies.

Teaching methods:

theoretical classes:	**practical:**
● **classes with teachers:**	● **classes with teachers:**
Conversational lecture, problem-based lecture, moderated discussion, multimedia presentation.	-
● **student's independent work:**	● **student's independent work:**
Learning the content of lectures, taking notes; studying literature, preparing for a final exam	-

Formal requirements related to admitting students to classes:

Introductory subjects:	**Entrance requirements:**
● none	● none

Subject objectives:

in terms of knowledge:

Get to know students:

- with concepts and concepts related to the use of artificial intelligence in logistics;
- with the possibilities of using intelligent and integral robots in logistics;
- with the concept and possibilities of using the Internet of Things in logistics;
- with the possibilities of using BIG Data solutions, cloud computing in logistics;
- with the possibilities of using Business Intelligence solutions in decision-making;

in terms of skills:

Teach students:

- using the possibilities of using modern technologies in solving logistics problems;
- presenting your own ideas and thoughts on topics related to the use of the Internet of Things and artificial intelligence in logistics;

in the field of social competences:

Develop students' social competences in the following areas:

- developing the need for self-education in the possibilities of using the Internet of Things and artificial intelligence;
- compliance with ethical, moral and legal principles in professional work;
- communication with the environment;

Education content:

theoretical classes:

topic number	educational content	number of hours
		SS
1	Familiarizing students with the objectives of education and the thematic scope of the subject	2
2	Basics of AI in business, The essence and importance of logistics technologies	1
3	Types of artificial intelligence methods and systems in logistics	2
4	Automated logistics decision making	2
5	Legal ethics of artificial intelligence in supply chains	2
6	Internet of Things in logistics processes	2
7	The responsibility of artificial intelligence in shaping logistics processes	2
8	The use of Big Data in logistics (BDA and BDaaS).	2
9	Electronic agent and its role in logistics processes	2

10	Privacy protection in the context of the development of artificial intelligence in the flow of supply chains	2
11	Intelligent and integral robots in logistics	2
12	Internet of Things (IoT) and Internet of Everything (IoE) and their importance for logistics.	2
13	Multi-channel (multi) and omni-channel (omni) models of product and service distribution.	2
14	Business intelligence in logistics.	2
15	Cloud computing and its role in logistics	2
16	Final colloquium	1
	Total theoretical classes:	**30**

practical:

topic number	**educational content**	**number of hours**
		SS
1	Not applicable	-
	Total practical classes:	**-**
	Total theoretical and practical classes:	**30**

Attention: the division concerns classes with direct participation of teachers or classes on an e-learning platform.

Abbreviations used: SS – full-time studies; SNS – part-time studies

Learning outcomes:

the category	**number**	**contents**
knowledge	**W_01**	knows the most important terms and concepts related to the use of artificial intelligence in logistics;
	W_02	has knowledge of the protection of industrial property and copyright in logistics activities;
	W_03	Has knowledge of the possibilities of using Big Data, cloud computing and Business Intelligence solutions in logistics;
skills	**U_01**	Diagnoses problems occurring in logistics and supply chains and is able to indicate possibilities of solving them;
	U_02	presents own ideas, doubts and suggestions related to the use of modern technologies in logistics using specialized language;

social competences	**K_01**	critically evaluates the information provided regarding the use of AI and IoT and conveys his own views in this regard, and has the ability to persuade others to take action in the application of these concepts;
	K_02	systematically expands its knowledge on the use of AI and IoT in logistics and supports others in acquiring this knowledge, as well as disseminates knowledge on this subject;

Completion of the course/verification of learning outcomes:	
form of assessment:	Pass with grade (ZO)
pass conditions and criteria:	The condition for passing the course is: ● active participation of students in classes, ● obtaining a positive grade in the final test by students, in accordance with the criteria adopted by the lecturer;
How to pass the course:	
final assessment form:	Weighted average for the grade from the final test and activity in classes. **Assessment from the colloquium** calculated based on the percentage of correct answers given by the student in the test prepared by the lecturer. **Grade for activity in classes** calculated on the basis of the lecturer's assessment of the frequency of involvement (participation) in class discussions, the substantive level of the statements and the critical approach to the discussed problem.
evaluation criteria:	**Assessment criteria for the final colloquium:** ● 5.0 – over 70% of correct answers to questions; ● 4.5 – from 66 to 70% of correct answers; ● 4.0 – from 61 to 65% of correct answers; ● 3.5 – from 56 to 60% of correct answers; ● 3.0 – from 50 to 55% of correct answers; ● 2.0 – less than 50% correct answers; **Criteria for assessing activity during classes:** ● 5.0 - the student participated very often in the discussion, the substantive value of his statements was high and he approached the discussed problem critically; ● 4.5 - the student often participated in the discussion, the substantive value of his statements was rather high and he approached the discussed problem rather critically; ● 4.0 - the student often participated in the discussion, the substantive value of his statements was at a relatively good level and he was rather critical of the discussed problem; ● 3.5 - the student rarely participated in the discussion, the substantive value of his statements was at an average level and he approached the problem discussed rather uncritically ● 3.0 - the student participated in the discussion sporadically, the substantive value of his statements was low and he approached the discussed problem uncritically; ● 2.0 – the student did not participate in the discussions;

method of calculating the rating and verification of learning outcomes:	**item**	**method of verification**	**reference to effects**	**evaluation weight In %**
	O1	Final colloquium	W_01, W_02, W_03, U_01, K_01	80%
	02	Activity in classes	K_01, K_02, U_01, U_02, W_01, W_02, W_03,	20%
method of calculating the final grade:	$Ot = O1x0.8 + O2x0.2$			
How to pass practical classes:				
final assessment form:	Not applicable			
evaluation criteria:	Not applicable			
method of calculating the rating and verification of learning outcomes:	**item**	**method of verification**	**reference to effects**	**evaluation weight In %**
	O1	-	-	-
	O2	-	-	-
method of calculating the final grade:	Not applicable			
method of passing the course:				
final assessment form:	Grade for theoretical classes			
method of calculating the rating and verification of learning outcomes:	**item**	**method of verification**	**reference to effects**	**evaluation weight ECTS**
	Ot	Theoretical assessment	W_01, W_02, W_03, U_01, U_02, K_01, K_02	2
method of calculating the final grade:	$Ok = Ot$			
Learning outcomes matrix for classes:				

number (symbol) of the learning outcome	**reference to learning outcomes for the field**
W_01	K1_W01, K1_W02, K1_W14
W_02	K1_W03
W_03	K1_W04, K1_W06, K1_W08

U_01	K1_U01, K1_U02, K1_U03, K1_U05, K1_U06
U_02	K1_U03; K1_U04
K_01	K1_K02; K1_K03; K1_K04; K1_K07
K_02	K1_K05
List of literature:	

A. Literature required to finally pass the course (pass the exam):

- M. Chaberek, A. Jezierski, *IT tools for logistics processes*, CeDeWu.pl Wydawnictwa Fachowe Warszawa 2010.
- smelter, *Business intelligence as an element of the information supply system*, Scientific Yearbooks of the WSB University in Toruń, 2013, No. 12 (12), pp. 127-142.
- M. Antonowicz, S. Jarzębowski, T. Gonsior, Internet *things and its impact on the supply chain*, Entrepreneurship and Management, 5/2018, pp. 295-310.
- P. Zakrzeski, M. Jurek, *Internet of Things in the integration of logistics processes in crisis management systems*, Materials Management and Logistics, (5/2018 (CD)), pp. 764-779.
  A. Jóźwiak, A. Świderski, Artificial intelligence algorithms in logistics, Scientific Works of the Warsaw University of Technology. Transport, 117/2017.

- **B. Additional literature:**

- Weiland D., *Identifying the impact of information logistics on contemporary conceptions of logistics*, Transport Economics and Logistics. - 2018, nr 78, s. 167-177.
- Weiland D., *Omnichannel as a new challenge for logistics*, Torun Business Review 2016, nr 15(4) s. 69-78.
- Weiland D., Big data as an information source in the decision making-processes of the e-commerce companies, Research Journal of the University of Gdansk. Transport Economics and Logistics (Modelling of Logistics Processes and Systems) 2017, Vol. 71, s. 179-190.

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Mapping and IT support for the analysis of logistics processes

Class code and name:		Form of assessment	Number of ECTS points
code	**name**		
S.4.4	Mapping and IT support for the analysis of logistics processes	CREDIT WITH GRADE	5

Field of study:	Logistics

Characteristics of classes:

study profile	level of study	compulsory classes for the major	elective classes	semester
practical	Bachelor's degree course	NO	not	V

Discipline:

Management and quality sciences

Name of the unit conducting classes:	People conducting classes:
Department of Management	Persons designated in accordance with the course assignment for a given academic year

Division of learning time taking into account the student's workload:

forms of classes/ student's independent work	number of hours					number of ECTS points
	N (teacher)		S (student)		SUM	
	SS	SNS	SS	SNS		
Practical classes [total] CW 30	**30**	-	**80**	-	125	5
● Introductory classes	-	-	-	-		
● Workshop exercises	**26**	-	-	-		
● Summary classes - presentation of an individual task	**4**	-	-	-		
● **Practical classes [total] PZ 15**	**15**	-	-	-		
● Practical exercises at the employer's	**15**	-	-	-		
● Summary classes - colloquium	-	-	-	-		
● Studying literature	-	-	**50**	-		
● Preparation of homework	-	-	-	-		

● Preparation for passing	-	-	**30**	-		
● SUM	**45**	-	**80**	-	**125**	**5**

N – classes with a teacher; S – student's independent work; SS – full-time studies; SNS – part-time studies.

Teaching methods:

theoretical classes:	**practical:**
● **classes with teachers:**	● **classes with teachers:**
Not applicable	Presentation of the issues in practice, discussion, analysis of the situation.
● **student's independent work:**	● **student's independent work:**
Not applicable	Learning the content of classes, taking notes, studying literature, preparing to pass the course

Formal requirements related to admitting students to classes:

Introductory subjects:	**Entrance requirements:**
● none	● the student has basic knowledge of logistics, has mastered the ability to express himself orally, is able to use professional literature, is able to work both independently and in a team;

Subject objectives:

in terms of knowledge:

Get to know students:

- with methods of mapping logistics processes;
- with IT tools supporting the design of logistics systems and processes;

in terms of skills:

Teach students:

- application of tools and instruments for mapping logistics processes for the needs of an exemplary enterprise,
- drawing conclusions and organizing a logistics project, analyzing and assessing a specific situation in the enterprise.

in the field of social competences:

Develop students' social competences in the following areas:

- cooperation and work in a group, in particular taking on various roles in it;
- supplementing and improving acquired knowledge in the field of mapping logistics processes;
- active participation in discussions related to the optimization of logistics processes;
- thinking and acting in an entrepreneurial way;

Education content:

practical:		
topic number	**educational content**	**number of hours**
		SS
1	Mapping logistics processes.	6
2	IT tools supporting the design of logistics systems and processes.	4
3	Process mapping notations – types and basic symbolism.	4
4	BPMN 2.0 notation	4
5	Characteristics and systematics of design tools in logistics processes.	4
6	Adonis as a BPMN tool – practical use.	4
7	Passing the workshop classes	4
	Total workshop exercises:	**30**
Practical exercises at the employer's:		
1	Practical skills classes will include the content of mapping and IT support for the analysis of logistics processes in the field of: mapping of logistics processes and the use of IT tools in the design of logistics processes, which will allow the improvement of skills related to using the acquired IT tools in practice - to ensure quality and solve logistic problems in the organization.	15
	Total practical classes (workshop exercises and practical exercises at the employer's):	**45**

Attention: the division concerns classes with direct participation of teachers or classes on an e-learning platform.

Abbreviations used: SS – full-time studies; SNS – part-time studies

Learning outcomes:

the category	**num-ber**	**Contents**
knowledge	**W_01**	knows advanced IT tools supporting the design of logistics systems and processes;
	W_02	has advanced knowledge of the principles of mapping logistics processes;
skills	**U_01**	is able to use tools and instruments for mapping logistics processes for the needs of the enterprise;
	U_02	is able to draw conclusions regarding a logistics project, analysis and assessment of a specific situation in the enterprise;
	U_03	presents own ideas, doubts and suggestions using specialized language; has developed interpersonal communication skills;

	U_04	cooperates with other people as part of tasks in the field of mapping and IT support for the analysis of logistics processes;
social competences	**K_01**	critically evaluates the information provided and conveys one's own views and value system in the professional sphere;
	K_02	develops professional achievements by taking optimal actions to improve own and other people's work and disseminate good practices in the field of mapping and IT support for the analysis of logistics processes;

Completion of the course/verification of learning outcomes:	
form of assessment:	Pass with grade (ZO)
pass conditions and criteria:	The condition for passing the course is: obtaining by students, in accordance with the criteria adopted by the lecturer, a positive grade in practical classes, both in workshop exercises and practical exercises at the employer. **Workshop exercises:** Independent preparation and performance of an intellectual task during classes (choose from: a paper, a report on a narrow issue, a speech covering a narrow issue using a multimedia presentation, a speech covering a narrow issue in oral form). **Practical exercises at the employer's:** The grade is calculated based on the lecturer's assessment of the frequency of involvement (participation) in class discussions, the substantive level of the statements and the critical approach to the discussed problem.
How to pass practical classes:	
final assessment form:	Arithmetic average of grades for workshop exercises and practical exercises at the employer.
evaluation criteria:	**Workshop exercises:** ● 5.0 - the student completed the task in the form specified by the lecturer, and its substantive value is at a high level; ● 4.5 - the student completed the task in the form specified by the lecturer, and its substantive value is rather high, but there were minor shortcomings that do not significantly affect the overall substantive level of the task; ● 4.0 - the student completed the task in the form specified by the lecturer, and its substantive value is rather good, but there are shortcomings that do not significantly affect the overall substantive level of the task; ● 3.5 - the student did not complete the task in the form specified by the lecturer, and its substantive value is rather at a sufficient level, but there are shortcomings that significantly affect the overall substantive level of the task; ● 3.0 - the student completed the task in a form that differed significantly from the form specified by the lecturer, and its substantive value is rather at a sufficient level, but there were shortcomings that significantly affect the overall substantive level of the task; ● 2.0 – the student did not complete the task; **Practical exercises at the employer's:**

<table>
<tr><td></td><td colspan="4">

5.0 - the student participated very often in the discussion, the substantive value of his statements was high and he approached the problem discussed critically
4.5 - the student often participated in the discussion, the substantive value of his statements was rather high and he approached the discussed problem rather critically
4.0 - the student often participated in the discussion, the substantive value of his statements was at a relatively good level and he was rather critical of the discussed problem
3.5 - the student rarely participated in the discussion, the substantive value of his statements was at an average level and he approached the problem discussed rather uncritically
3.0 - the student participated in the discussion sporadically, the substantive value of his statements was low and he approached the discussed problem uncritically
2.0 – the student did not participate in the discussions

</td></tr>
<tr><td rowspan="3">method of calculating the rating and verification of learning outcomes:</td><td>item</td><td>method of verification</td><td>reference to effects</td><td>evaluation weight In %</td></tr>
<tr><td>O1</td><td>Workshop exercises</td><td>W_01; W_02; U_01</td><td>50%</td></tr>
<tr><td>O2</td><td>Practical exercises at the employer's</td><td>W_01; W_02; U_01; U_02: U_03: U_04; K_01: K_02</td><td>50%</td></tr>
<tr><td>method of calculating the final grade:</td><td colspan="4">Op=0.5xO1+0.5xO2</td></tr>
<tr><td colspan="5">method of passing the course:</td></tr>
<tr><td>final assessment form:</td><td colspan="4">Grade for practical classes</td></tr>
<tr><td rowspan="2">method of calculating the rating and verification of learning outcomes:</td><td>item</td><td>method of verification</td><td>reference to effects</td><td>evaluation weight In %</td></tr>
<tr><td>On</td><td>Practical</td><td>W_01; W_02; U_01; U_02: U_03: U_04; K_01: K_02</td><td>100%</td></tr>
<tr><td>method of calculating the final grade:</td><td colspan="4">Ok=Op</td></tr>
<tr><td colspan="5">Learning outcomes matrix for classes:</td></tr>
<tr><td>number (symbol) of the learning outcome</td><td colspan="4">reference to learning outcomes for the field</td></tr>
<tr><td>W_01</td><td colspan="4">K1_W02; K1_W14</td></tr>
</table>

W_02	K1_W06; 1_W11
U_01	K1_U01; K1_U05
U_02	K1_U04; K1_U07
U_03	K1_U03; K1_U04
U_04	K1_U13
K_01	K1_K02; K1_K03; K1_K04; K1_K07
K_02	K1_K05

List of literature:

A. Literature required to finally pass the course (pass the exam):

- Gawin B., Marcinkowski B. (2013): Business process simulation, One Press, Gliwice
- Bozarth C., Handfield R.B. (2007): Introduction to operations and supply chain management, One Press, Gliwice

B. Additional literature:

- Drejewicz Sz. (2017): Understanding BPMN - business process modeling, OnePress, Gliwice
- Nowosielski S. (2008): Logistics processes and projects, Publishing House of the Wrocław University of Economics, W
- M. Jacyna, K. Lewczuk (2016): Designing logistics systems, PWN, Warsaw

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Reverse logistics and closed loop supply chains

Class code and name:		Form of assessment	Number of ECTS points
code	name		
S.4.5	Reverse logistics and closed loop supply chains	EXAM	5

Field of study:	Logistics

Characteristics of classes:

study profile	level of study	compulsory classes for the major	elective classes	semester
practical	Bachelor's degree course	NO	not	V

Discipline:

Management and quality sciences

Name of the unit conducting classes:	People conducting classes:
Department of Management	Persons designated in accordance with the course assignment for a given academic year

Division of learning time taking into account the student's workload:

forms of classes/ student's independent work	number of hours					number of ECTS points
	N (teacher)		S (student)		SUM	
	SS	SNS	SS	SNS		
Theoretical classes [total] K30	**30**	-	**20**	-	50	2
● Introductory classes	-	-	-	-		
● Seminars	30	-	-	-		
● Summary classes - presentation of individual work		-	-	-		
● Studying literature	-	-	15	-		
● Preparation for passing	-	-	5	-		
Practical classes [total] PZ15	**15**	-	**60**	-	75	3
● Introductory classes	-	-	-	-		
● Practical exercises at the employer's	15	-	-	-		

● Summary classes - colloquium	-	-	-	-		
● Studying literature	-	-	20	-		
● Preparation of homework	-	-	-	-		
● Preparation for passing	-	-	40	-		
SUM	**45**	**-**	**80**	**-**	**125**	**5**

N – classes with a teacher; S – student's independent work; SS – full-time studies; SNS – part-time studies.

Teaching methods:

theoretical classes:	**practical:**
● **classes with teachers:**	● **classes with teachers:**
Presentation of issues, discussion, use of multimedia presentation.	Presentation of the issues in practice, discussion, analysis of the situation.
● **student's independent work:**	● **student's independent work:**
Learning the content of the seminar, taking notes; studying literature, preparing for a final exam.	Learning the content of the classes, taking notes, studying literature, preparing for the exam.

Formal requirements related to admitting students to classes:

Introductory subjects:	**Entrance requirements:**
● none	● the student has basic knowledge of logistics, has mastered the ability to express himself orally, is able to use professional literature, is able to work both independently and in a team;

Subject objectives:

in terms of knowledge:

Get to know students:

- with concepts, concepts and methodology in the field of reverse logistics and closed loop;
- with the concept of sustainable development;
- with the concept of Green Logistics Strategies;
- with the concept of an environmental management system;

in terms of skills:

Teach students:

- using methods and tools of reverse logistics and closed loop;
- using waste management methods, packaging and waste handling methods - recycling, recovery, disposal;
- shaping and working in the culture of green logistics strategies and within the environmental management system;

in the field of social competences:

Develop students' social competences in the following areas:

- communication with the environment;
- design thinking skills to achieve established business and personal goals;
- compliance with ethical, moral and legal principles in professional work;
- developing the need for self-education for reverse logistics and closed loop;

Education content:

theoretical classes:

topic number	educational content	number of hours
		SS
1	The essence of reverse logistics.	2
2	The essence of sustainable development.	4
3	Logistics of disposal of mixed, segregated, bulky, medical and hazardous municipal waste.	6
4	Waste management, packaging and methods of dealing with waste - recycling, re-covery, disposal.	6
5	Green logistics strategies. Environmental management system.	2
6	The essence of feedback processes in the enterprise – case studies.	4
7	Recycling and reverse logistics as an element of the circular economy and close loop supply chain.	4
8	Passing theoretical classes.	2
	Total theoretical classes:	**30**

practical:

topic number	educational content	number of hours
		SS
1	Practical skills classes will include the content of reverse logistics, disposal of mixed, segregated, bulky, medical and hazardous municipal waste, waste management, packaging such as: recycling, recovery, disposal. Acquiring practical skills in the field of green logistics strategies, environmental management, reverse processes in the enterprise and recycling and reverse logistics as an element of the circular economy and close loop supply chain.	15
	Total practical classes:	**15**
	Total theoretical and practical classes:	**45**

Attention: the division concerns classes with direct participation of teachers or classes on an e-learning platform.

Abbreviations used: SS – full-time studies; SNS – part-time studies

Learning outcomes:

the category	num-ber	contents
knowledge	**W_01**	has advanced knowledge in the field of reverse logistics;
	W_02	knows at an advanced level the logistics tools for disposal of mixed, segregated, large-sized, medical and hazardous municipal waste, and management: waste, packaging, green logistics strategies, environmental management system, the essence of feedback processes in the enterprise;
skills	**U_01**	uses the principles and methods of reverse logistics and closed loop in professional work to ensure quality and solve problems in the organization;
	U_02	demonstrates an active attitude in team work, using the principles of reverse logistics and closed loop to identify and reduce waste in the organization, especially in production processes;
	U_03	presents own ideas, doubts and suggestions using specialized language; has developed interpersonal communication skills;
	U_04	interacts with other people as part of tasks in the field of reverse logistics and closed loop;
social competences	**K_01**	critically evaluates the provided information and conveys its own views and value system in the professional sphere, promotes the logistic essence of sustainable development, green logistics strategies, environmental management system; convinces others to take similar actions;
	K_02	develops professional achievements by taking optimal actions to improve their own work and that of other people and disseminate good practices in the field of reverse logistics and closed loop;

Completion of the course/verification of learning outcomes:

form of assessment:	Exam
pass conditions and criteria:	The condition for passing the course is: ● active participation of students in classes, ● obtaining by students, in accordance with the criteria adopted by the lecturer, a positive grade in theoretical and practical classes, ● obtaining a positive grade in the exam.
method of passing theoretical classes:	
final assessment form:	Independent preparation and performance of an intellectual task during classes (choose from: a paper, a report on a narrow issue, a speech covering a narrow issue using a multimedia presentation, a speech covering a narrow issue in oral form).

<table>
<tr><td>evaluation criteria:</td><td colspan="4">

5.0 - the student completed the task in the form specified by the lecturer, and its substantive value is at a high level;
4.5 - the student completed the task in the form specified by the lecturer, and its substantive value is rather high, but there were minor shortcomings that do not significantly affect the overall substantive level of the task;
4.0 - the student completed the task in the form specified by the lecturer, and its substantive value is rather good, but there are shortcomings that do not significantly affect the overall substantive level of the task;
3.5 - the student did not complete the task in the form specified by the lecturer, and its substantive value is rather at a sufficient level, but there are shortcomings that significantly affect the overall substantive level of the task;
3.0 - the student completed the task in a form that differed significantly from the form specified by the lecturer, and its substantive value is rather at a sufficient level, but there were shortcomings that significantly affect the overall substantive level of the task;
2.0 – the student did not complete the task;

</td></tr>
<tr><td rowspan="2">method of calculating the rating and verification of learning outcomes:</td><td>item</td><td>method of verification</td><td>reference to effects</td><td>evaluation weight In %</td></tr>
<tr><td>O1</td><td>Independent preparation and completion of an intellectual task during classes</td><td>W_01; W_02; U_01; U_02; U_03; U_04; K_01; K_02</td><td>100%</td></tr>
<tr><td>method of calculating the final grade:</td><td colspan="4">$Ot = O1$</td></tr>
<tr><td colspan="5">How to pass practical classes:</td></tr>
<tr><td>final assessment form:</td><td colspan="4">The grade is calculated based on the lecturer's assessment of the frequency of involvement (participation) in class discussions, the substantive level of the statements and the critical approach to the discussed problem.</td></tr>
<tr><td>evaluation criteria:</td><td colspan="4">

5.0 - the student participated very often in the discussion, the substantive value of his statements was high and he approached the problem discussed critically
4.5 - the student often participated in the discussion, the substantive value of his statements was rather high and he approached the discussed problem rather critically
4.0 - the student often participated in the discussion, the substantive value of his statements was at a relatively good level and he was rather critical of the discussed problem
3.5 - the student rarely participated in the discussion, the substantive value of his statements was at an average level and he approached the problem discussed rather uncritically
3.0 - the student participated in the discussion sporadically, the substantive value of his statements was low and he approached the discussed problem uncritically
2.0 – the student did not participate in the discussions

</td></tr>
<tr><td>method of calculating the rating</td><td>item</td><td>method of verification</td><td>reference to effects</td><td>evaluation weight In %</td></tr>
</table>

and verification of learning outcomes:	O1	Involvement (participation) in discussions during classes, substantive level of statements and critical approach to the discussed problem.	W_01; W_02; U_01; U_02; U_03; U_04; K_01; K_02	100%
method of calculating the final grade:	On = O1			
How to pass the exam:				
final assessment form:	Multiple choice test. The grade is calculated based on the percentage of correct answers given by the student in the test prepared by the lecturer			
evaluation criteria:	• 5.0 – over 70% correct answers to test questions; • 4.5 – from 66 to 70% of correct answers; • 4.0 – from 61 to 65% of correct answers; • 3.5 – from 56 to 60% of correct answers; • 3.0 – from 50 to 55% of correct answers; • 2.0 – less than 50% correct answers;			
method of passing the course:				
final assessment form:	Weighted average of grades from the exam and for practical and theoretical classes, taking into account the weight of ECTS points.			
method of calculating the rating and verification of learning outcomes:	**item**	**method of verification**	**reference to effects**	**evaluation weight ECTS**
	Ot	Theoretical assessment	W_01; W_02	2
	On	Practical assessment	W_01; W_02; U_01; U_02; U_03; U_04; K_01; K_02	3
	Are you	Exam grade	W_01; W_02; K_01; K_02	Nd.
method of calculating the final grade:	$Ok = 0{,}6xOe + 0{,}4x(Otx2 + Opx3)/5$			
Learning outcomes matrix for classes:				

number (symbol) of the learning outcome	reference to learning outcomes for the field
W_01	K1_W02; K1_W06; K1_W11; K1_U14
W_02	K1_W06; K1_W14
U_01	K1_U05; K1_U06
U_02	K1_U05; K1_U06

U_03	K1_U03; K1_U04
U_04	K1_U13
K_01	K1_K02; K1_K03; K1_K04; K1_K07
K_02	K1_K05

List of literature:

A. Literature required to finally pass the course (pass the exam):

- Szymonik, Ecologistics, Theory and practice, Difin, Warsaw 2018.
- Tundys, Green supply chain, CeDeWu, Warsaw 2020.
- J. Szołtysek, S. Twaróg, Reverse logistics. Theory and practice, PWE, Warsaw 2017.
- Starostka-Patyk, M. (2016). Reverse logistics of defective products in the management of production companies. Polish Economic Publishing House.

B. Additional literature:

- Vol. Rosik-Dulewska, Basics of waste management, PWN, Warsaw 2015.
- M. Hordynska, Ecologistics and waste management, Wydawnictwo Politechniki Śląskiej, Katowice 2017.

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Lean Management in logistics

Class code and name:		**Form of assessment**	**Number of ECTS points**
code	**name**		
S.4.6.	Lean Management in logistics	EXAM	5

Field of study:	Logistics

Characteristics of classes:

study profile	**level of study**	**compulsory classes for the major**	**elective classes**	**semester**
practical	Bachelor's degree course	NO	not	5

Discipline:

Management and quality sciences						
Name of the unit conducting classes:			**People conducting classes:**			
Department of Management			Persons designated in accordance with the course assignment for a given academic year			
Division of learning time taking into account the student's workload:						
forms of classes/ student's independent work	**number of hours**					**number of ECTS points**
	N (teacher)		**S (student)**		**SUM**	
	SS	**SNS**	**SS**	**SNS**		
Theoretical classes [total] K30	**30**	-	**20**	-	50	2
● Introductory classes	-	-	-	-		
● Seminars	26	-	-	-		
● Summary classes - presentation of individual work	**4**	-	-	-		
● Studying literature	-	-	15	-		
● Preparation for passing	-	-	5	-		
Practical classes [total] PZ 15	**15**	-	**60**	-	75	5
● Introductory classes	-	-	-	-		
● Practical exercises at the employer's	15	-	-	-		
● Summary classes - colloquium	-	-	-	-		
● Studying literature	-	-	20	-		
● Preparation of homework	-	-	-	-		
● Preparation for passing	-	-	40	-		
SUM	**45**	-	**80**	-	**125**	**5**
N – classes with a teacher; S – student's independent work; SS – full-time studies; SNS – part-time studies.						
Teaching methods:						
theoretical classes:			**practical:**			
● **classes with teachers:**			● **classes with teachers:**			
Presentation of issues, discussion, use of multimedia presentation.			Presentation of the issues in practice, discussion, analysis of the situation.			

● **student's independent work:**	● **student's independent work:**
Learning the content of the seminar, taking notes; studying literature, preparing for a final exam.	Learning the content of the classes, taking notes, studying literature, preparing for the exam.

Formal requirements related to admitting students to classes:

Introductory subjects:	**Entrance requirements:**
● none	● the student has basic knowledge of logistics, has mastered the ability to express himself orally, is able to use professional literature, is able to work both independently and in a team;

Subject objectives:

in terms of knowledge:

Get to know students:

- with concepts, concepts and methodology in the field of Lean Management
- with new management concepts derived from Lean;
- with the concept of Agile Management;

in terms of skills:

Teach students:

- using Lean management methods and tools;
- using various tools such as brainstorming, 5 Why, Ishikawa diagram to solve problems;
- teamwork;
- shaping and working in a Lean culture;

in the field of social competences:

Develop students' social competences in the following areas:

- communication with the environment;
- design thinking skills to achieve established business and personal goals;
- compliance with ethical, moral and legal principles in professional work;
- developing the need for self-education for Lean management;

Education content:

theoretical classes:

	educational content	**number of hours**

topic number		SS
1	Istota Lean Management	2
2	Continuous improvement in Lean Manufacturing (principles, methods and tools).	4
3	Basic Lean Manufacturing methods of production management - the wall of the Lean Manufacturing House (including Heijunka, Jidoka, SMED, Takt Time).	6
4	Basic Lean Manufacturing tools - Lean Manufacturing House Wall (including FMEA, FTA, Six Sigma)	6
5	Lean Management and Agile Management - comparison of concepts.	2
6	Lean culture. Effective Lean teams.	2
7	The essence of Problem Solving (e.g. 5 whys, check sheets, correlation diagram).	4
8	Passing theoretical classes	4
	Total theoretical classes:	**30**

practical:

topic number	educational content	number of hours
		SS
1	Practical skills classes will include the content of Lean Management in Logistics in the field of basic Lean Manufacturing methods and tools, Lean culture, including work within Lean teams, which will allow you to improve skills related to using the principles, methods and tools of Lean Management in professional work - to ensure quality and solve problems in the organization.	15
	Total practical classes:	**15**
	Total theoretical and practical classes:	**45**

Attention: the division concerns classes with direct participation of teachers or classes on an e-learning platform.

Abbreviations used: SS – full-time studies; SNS – part-time studies

Learning outcomes:

the category	num-ber	contents
knowledge	**W_01**	has advanced knowledge of the principles and methods of Lean Management
	W_02	knows advanced Lean Management tools and the algorithm for their use
skills	**U_01**	uses the principles and methods of Lean Management in his professional work to ensure quality and solve problems in the organization

	U_02	demonstrates an active attitude in team work, using the principles of Lean Management to identify and reduce waste in the organization, especially in production processes
	U_03	presents own ideas, doubts and suggestions using specialized language; has developed interpersonal communication skills
	U_04	cooperates with other people as part of Lean Management tasks
social competences	**K_01**	critically evaluates the information provided and conveys one's own views and value system in the professional sphere, promotes Lean management in the organization and convinces others to take similar actions
	K_02	develops professional achievements by taking optimal actions to improve own and other people's work and disseminate good practices in the field of Lean Management
Completion of the course/verification of learning outcomes:		
form of assessment:	Exam	
pass conditions and criteria:	The condition for passing the course is: ● active participation of students in classes, ● obtaining by students, in accordance with the criteria adopted by the lecturer, a positive grade in theoretical and practical classes, ● obtaining a positive grade in the exam.	
method of passing theoretical classes:		
final assessment form:	Independent preparation and performance of an intellectual task during classes (choose from: a paper, a report on a narrow issue, a speech covering a narrow issue using a multimedia presentation, a speech covering a narrow issue in oral form).	
evaluation criteria:	● 5.0 - the student completed the task in the form specified by the lecturer, and its substantive value is at a high level; ● 4.5 - the student completed the task in the form specified by the lecturer, and its substantive value is rather high, but there were minor shortcomings that do not significantly affect the overall substantive level of the task; ● 4.0 - the student completed the task in the form specified by the lecturer, and its substantive value is rather good, but there are shortcomings that do not significantly affect the overall substantive level of the task; ● 3.5 - the student did not complete the task in the form specified by the lecturer, and its substantive value is rather at a sufficient level, but there are shortcomings that significantly affect the overall substantive level of the task; ● 3.0 - the student completed the task in a form that differed significantly from the form specified by the lecturer, and its substantive value is rather at a sufficient level, but there were shortcomings that significantly affect the overall substantive level of the task;	

<table>
<tr><td></td><td colspan="4">• 2.0 – the student did not complete the task;</td></tr>
<tr><td rowspan="2">method of calculating the rating and verification of learning outcomes:</td><td>item</td><td>method of verification</td><td>reference to effects</td><td>evaluation weight In %</td></tr>
<tr><td>O1</td><td>Independent preparation and completion of an intellectual task during classes</td><td>W_01; W_02; U_01; U_02; U_03; U_04; K_01; K_02</td><td>100%</td></tr>
<tr><td>method of calculating the final grade:</td><td colspan="4">$Ot = O1$</td></tr>
<tr><td colspan="5">How to pass practical classes:</td></tr>
<tr><td>final assessment form:</td><td colspan="4">The grade is calculated based on the lecturer's assessment of the frequency of involvement (participation) in class discussions, the substantive level of the statements and the critical approach to the discussed problem.</td></tr>
<tr><td>evaluation criteria:</td><td colspan="4">• 5.0 - the student participated very often in the discussion, the substantive value of his statements was high and he approached the problem discussed critically
• 4.5 - the student often participated in the discussion, the substantive value of his statements was rather high and he approached the discussed problem rather critically
• 4.0 - the student often participated in the discussion, the substantive value of his statements was at a relatively good level and he was rather critical of the discussed problem
• 3.5 - the student rarely participated in the discussion, the substantive value of his statements was at an average level and he approached the problem discussed rather uncritically
• 3.0 - the student participated in the discussion sporadically, the substantive value of his statements was low and he approached the discussed problem uncritically
• 2.0 – the student did not participate in the discussions</td></tr>
<tr><td rowspan="2">method of calculating the rating and verification of learning outcomes:</td><td>item</td><td>method of verification</td><td>reference to effects</td><td>evaluation weight In %</td></tr>
<tr><td>O1</td><td>Involvement (participation) in discussions during classes, substantive level of statements and critical approach to the discussed problem.</td><td>W_01; W_02; U_01; U_02; U_03; U_04; K_01; K_02</td><td>100%</td></tr>
<tr><td>method of calculating the final grade:</td><td colspan="4">On = O1</td></tr>
<tr><td colspan="5">How to pass the exam:</td></tr>
<tr><td>final assessment form:</td><td colspan="4">Multiple choice test. The grade is calculated based on the percentage of correct answers given by the student in the test prepared by the lecturer;</td></tr>
</table>

<table>
<tr><td>evaluation criteria:</td><td colspan="4">• 5.0 – over 70% correct answers to test questions:
• 4.5 – from 66 to 70% of correct answers;
• 4.0 – from 61 to 65% of correct answers;
• 3.5 – from 56 to 60% of correct answers;
• 3.0 – from 50 to 55% of correct answers;
• 2.0 – less than 50% correct answers;</td></tr>
<tr><td colspan="5">method of passing the course:</td></tr>
<tr><td>final assessment form:</td><td colspan="4">Weighted average of grades from the exam and for practical and theoretical classes, taking into account the weight of ECTS points</td></tr>
<tr><td rowspan="4">method of calculating the rating and verification of learning outcomes:</td><td>item</td><td>method of verification</td><td>reference to effects</td><td>evaluation weight ECTS</td></tr>
<tr><td>Ot</td><td>Theoretical assessment</td><td>W_01; W_02</td><td>2</td></tr>
<tr><td>On</td><td>Practical assessment</td><td>W_01; W_02; U_01; U_02; U_03; U_04; K_01; K_02</td><td>3</td></tr>
<tr><td>Are you</td><td>Exam grade</td><td>W_01; W_02; K_01; K_02</td><td>Nd.</td></tr>
<tr><td>method of calculating the final grade:</td><td colspan="4">$Ok = 0{,}6xOe + 0{,}4x(Otx2 + Opx3)/5$</td></tr>
<tr><td colspan="5">Learning outcomes matrix for classes:</td></tr>
<tr><td>number (symbol) of the learning outcome</td><td colspan="4">reference to learning outcomes for the field</td></tr>
<tr><td>W_01</td><td colspan="4">K1_W02; K1_W06; K1_W11; K1_U14</td></tr>
<tr><td>W_02</td><td colspan="4">K1_W06; K1_W14</td></tr>
<tr><td>U_01</td><td colspan="4">K1_U05; K1_U06</td></tr>
<tr><td>U_02</td><td colspan="4">K1_U05; K1_U06</td></tr>
<tr><td>U_03</td><td colspan="4">K1_U03; K1_U04</td></tr>
<tr><td>U_04</td><td colspan="4">K1_U13</td></tr>
<tr><td>K_01</td><td colspan="4">K1_K02; K1_K03; K1_K04; K1_K07</td></tr>
<tr><td>K_02</td><td colspan="4">K1_K05</td></tr>
<tr><td colspan="5">List of literature:</td></tr>
<tr><td colspan="5">A. Literature required to finally pass the course (pass the exam):</td></tr>
</table>

- Liker J. K.: The Toyota Way, 14 management principles of the world's leading manufacturing company, Ed. MT Biznes, Warsaw 2005
- Woamc J.P. et al.: Lean thinking – lean thinking. ProdPress com, Wrocław 2008

B. Additional literature:

- Womack J. P., Jones D. T., Slimming companies, Ed. CIM, Warsaw 2001.
- Womack J.P., Jones D.T., Roos D., The Machine That Changed the World, Prodpress.com, 2008
- Łazicki, Lean Manufacturing – practical application of the methodology, e-book, 2015
- Byrne A, How to revolutionize your company with lean management, 2013
- Enterprise management systems - Lean Management and Kaizen techniques. Techniques, Knowledge and Practice, 2014

Contact:	
contact person:	Employee of the IBiZ secretariat
phone:	59 306 76 04 (secretariat)
e-mail:	sekretariat.ibiz@upsl.edu.pl (secretariat)

Environmental certification in logistics

Class code and name:		Form of assessment	Number of ECTS points
code	name		
S.4.7.	Environmental certification in logistics	CREDIT WITH GRADE	4

Field of study:	Logistics

Characteristics of classes:

study profile	level of study	compulsory classes for the major	elective classes	semester
practical	Bachelor's degree course	NO	not	V

Discipline:

Management and quality sciences

Name of the unit conducting classes:	People conducting classes:
Department of Management	Persons designated in accordance with the course assignment for a given academic year

Division of learning time taking into account the student's workload:

forms of classes/ student's independent work	number of hours					number of ECTS points
	N (teacher)		S (student)		SUM	
	SS	SNS	SS	SNS		
Theoretical classes [total] K30	**30**	-	**20**	-	50	2
● Introductory classes	**1**	-	-	-		
● Seminars	27	-	-	-		
● Summary classes - presentation of individual work	**2**	-	-	-		
● Studying literature	-	-	15	-		
● Preparation for passing	-	-	5	-		
Practical classes [total] PZ 15	**15**	-	**35**	-	50	2
● Introductory classes	-	-	-	-		
● Practical exercises at the employer's	15	-	-	-		

● Summary classes - colloquium	-	-	-	-		
● Studying literature	-	-	20	-		
● Preparation of homework	-	-	-	-		
● Preparation for passing	-	-	15	-		
SUM	**45**	**-**	**55**	**-**	**100**	**4**

N – classes with a teacher; S – student's independent work; SS – full-time studies; SNS – part-time studies.

Teaching methods:

theoretical classes:	**practical:**
● **classes with teachers:**	● **classes with teachers:**
Presentation of issues, discussion, use of multimedia presentation.	Presentation of the issues in practice, discussion, analysis of the situation.
● **student's independent work:**	● **student's independent work:**
Learning the content of the seminar, taking notes, studying literature, preparing for the exam.	Learning the content of the classes, taking notes, studying literature, preparing for the exam.

Formal requirements related to admitting students to classes:

Introductory subjects:	**Entrance requirements:**
● none	● the student has basic knowledge of logistics, has mastered the ability to express himself orally, is able to use professional literature, is able to work both independently and in a team;

Subject objectives:

in terms of knowledge:

Get to know students:

- with concepts, concepts and methodology in the field of environmental certification in logistics
- with the role of environmental management systems in logistics

in terms of skills:

Teach students:

- use of environmental management instruments in logistics
- application of ISO and EMAS environmental standards

in the field of social competences:

Develop students' social competences in the following areas:

- communication with the environment
- Design thinking skills to achieve established business and personal goals

- compliance with ethical, moral and legal principles in professional work

Education content:

theoretical classes:

topic number	educational content	number of hours
		SS
1	Standardization, certification and accreditation in logistics	4
2	Legal basis of standardization	2
3	European directives and harmonized standards	4
4	Structure and content of standards. ISO guides on test methods, assessment and certification	2
5	ISO environmental standards – essence and accreditation process	4
6	EMAS – essence and certification	2
7	Standardization, certification and accreditation	2
8	The role of quality and safety management systems in logistics	4
9	Environmental marking	2
10	Packaging – environmental aspect	2
11	Passing the subject	2
	Total theoretical classes:	**30**

practical:

topic number	educational content	number of hours
		SS
1	Practical skills classes will include content in the field of environmental certification in logistics, allowing you to improve your skills in professional work - to ensure quality and solve problems in the organization.	15
	Total practical classes:	**15**
	Total theoretical and practical classes:	**45**

Attention: the division concerns classes with direct participation of teachers or classes on an e-learning platform.

Abbreviations used: SS – full-time studies; SNS – part-time studies

Learning outcomes:

the category	number	contents
knowledge	**W_01**	knows and understands the role, importance and standards of quality management in logistics, and knows the use of quality improvement methods and tools in logistics management;
	W_02	knows and understands the impact of logistics processes on the natural environment and knows ways of pro-ecological management of the organization;
skills	**U_01**	is able to observe, analyze, diagnose and interpret phenomena occurring in logistics in the field of environmental certification;
	U_02	has basic research skills enabling the construction of simple research and analyzes in the area of environmental management in logistics; is able to formulate conclusions, develop and present results and indicate directions for further research;
	U_03	presents own ideas, doubts and suggestions using specialized language; has developed interpersonal communication skills;
	U_04	cooperates with other people as part of environmental certification tasks;
social competences	**K_01**	developing the achievements of the profession by taking optimal actions to improve the work of oneself and other people and disseminating good practices;
	K_02	thinking and acting in an entrepreneurial way, in particular in solving problems related to environmental certification in logistics;

Completion of the course/verification of learning outcomes:	
form of assessment:	Pass with grade
pass conditions and criteria:	The condition for passing the course is: ● active participation of students in classes, ● obtaining by students, in accordance with the criteria adopted by the lecturer, a positive grade in theoretical and practical classes.
method of passing theoretical classes:	
final assessment form:	Independent preparation and performance of an intellectual task in class: a project on a narrow problem with a speech covering a narrow issue using a multimedia presentation.
evaluation criteria:	● 5.0 - the student completed the task in the form specified by the lecturer, and its substantive value is at a high level; ● 4.5 - the student completed the task in the form specified by the lecturer, and its substantive value is rather high, but there were minor shortcomings that do not significantly affect the overall substantive level of the task; ● 4.0 - the student completed the task in the form specified by the lecturer, and its substantive value is rather good, but there are shortcomings that do not significantly affect the overall substantive level of the task; ● 3.5 - the student did not complete the task in the form specified by the lecturer, and its substantive value is rather at a sufficient level, but there are shortcomings that significantly affect the overall substantive level of the task;

<table>
<tr><td></td><td colspan="4">

3.0 - the student completed the task in a form that differed significantly from the form specified by the lecturer, and its substantive value is rather at a sufficient level, but there were shortcomings that significantly affect the overall substantive level of the task;
2.0 – the student did not complete the task;

</td></tr>
<tr><td rowspan="2">method of calculating the rating and verification of learning outcomes:</td><td>item</td><td>method of verification</td><td>reference to effects</td><td>evaluation weight In %</td></tr>
<tr><td>O1</td><td>Independent preparation and completion of an intellectual task during classes.</td><td>W_01; W_02; U_01; U_02; U_03; U_04; K_01; K_02</td><td>100%</td></tr>
<tr><td>method of calculating the final grade:</td><td colspan="4">$Ot = O1$</td></tr>
<tr><td colspan="5">How to pass practical classes:</td></tr>
<tr><td>final assessment form:</td><td colspan="4">The grade is calculated based on the lecturer's assessment of the frequency of involvement (participation) in class discussions, the substantive level of the statements and the critical approach to the discussed problem.</td></tr>
<tr><td>evaluation criteria:</td><td colspan="4">

5.0 - the student participated very often in the discussion, the substantive value of his statements was high and he approached the discussed problem critically;
4.5 - the student often participated in the discussion, the substantive value of his statements was rather high and he approached the discussed problem rather critically;
4.0 - the student often participated in the discussion, the substantive value of his statements was at a relatively good level and he was rather critical of the discussed problem;
3.5 - the student rarely participated in the discussion, the substantive value of his statements was at an average level and he approached the discussed problem rather uncritically;
3.0 - the student participated in the discussion sporadically, the substantive value of his statements was low and he approached the discussed problem uncritically;
2.0 – the student did not participate in the discussions;

</td></tr>
<tr><td rowspan="2">method of calculating the rating and verification of learning outcomes:</td><td>item</td><td>method of verification</td><td>reference to effects</td><td>evaluation weight In %</td></tr>
<tr><td>O1</td><td>Involvement (participation) in discussions during classes, substantive level of statements and critical approach to the discussed problem.</td><td>W_01; W_02; U_01; U_02; U_03; U_04; K_01; K_02</td><td>100%</td></tr>
<tr><td>method of calculating the final grade:</td><td colspan="4">On = O1</td></tr>
<tr><td colspan="5">method of passing the course:</td></tr>
<tr><td>final assessment form:</td><td colspan="4">Weighted average of grades from the exam and for practical and theoretical classes, taking into account the weight of ECTS points</td></tr>
</table>

method of calculating the rating and verification of learning outcomes:	item	method of verification	reference to effects	evaluation weight ECTS
	Ot	Theoretical assessment	W_01; W_02	2
	On	Practical assessment	W_01; W_02; U_01; U_02; U_03; U_04; K_01; K_02	2
method of calculating the final grade:	$Ok = (Otx2 + Opx2)/4$			

Learning outcomes matrix for classes:

number (symbol) of the learning outcome	reference to learning outcomes for the field
W_01	K1_W06
W_02	K1_W05
U_01	K1_U01
U_02	K1_U02
U_03	K1_U04
U_04	K1_U13
K_01	K1_K05
K_02	K1_K04

List of literature:

A. Literature required to finally pass the course (pass the exam):

- ISO 14001 standard
- Selected texts of standards from the logistics, transport and packaging, and environment sectors; Polish Committee for Standardization PKN, Warsaw.
- J. Łunarski, Normalization and standardization, OW PRz, Rzeszów 2014.
- J. Łunarski, Certification in business and development activities, IMBGS, Warsaw 2015.

B. Additional literature:

- Act on standardization of 12 September 2002

Contact:	
contact person:	Employee of the IBiZ secretariat
phone:	59 306 76 04 (secretariat)

e-mail:	sekretariat.ibiz@upsl.edu.pl (secretariat)

Risk management in logistics projects

Class code and name:		**Form of assessment**	**Number of ECTS points**
code	**name**		
S.4.8.	Risk management in logistics projects	EXAM	5

Field of study:	Logistics

Characteristics of classes:

study profile	**level of study**	**compulsory classes for the major**	**elective classes**	**semester**
practical	Bachelor's degree course	NO	not	WE

Discipline:

Management and quality sciences

Name of the unit conducting classes:	**People conducting classes:**
Department of Management	Persons designated in accordance with the course assignment for a given academic year

Division of learning time taking into account the student's workload:

forms of classes/ student's independent work	**number of hours**					**number of ECTS points**
	N (teacher)		**S (student)**		**SUM**	
	SS	**SNS**	**SS**	**SNS**		
Theoretical classes [total] W30	**30**	-	**20**	-	50	2
● Introductory classes	-	-	-	-		
● Lecture	30	-	-	-		
● Summary classes - presentation of individual work	-	-	-	-		
● Studying literature	-	-	8	-		
● Preparation for passing	-	-	12	-		
Practical classes [total] PZ 30	**30**	-	**45**	-	75	3

● Introductory classes	-	-	-	-		
● Practical exercises at the employer's	30	-	-	-		
● Summary classes - colloquium	-	-	-	-		
● Studying literature	-	-	35	-		
● Preparation of homework	-	-	-	-		
● Preparation for passing	-	-	10	-		
SUM	**60**	**-**	**65**	**-**	**125**	**5**

N – classes with a teacher; S – student's independent work; SS – full-time studies; SNS – part-time studies.

Teaching methods:

theoretical classes:	**practical:**
● **classes with teachers:**	● **classes with teachers:**
Presentation of issues, use of multimedia presentation.	Presentation of the issues in practice, discussion, situation analysis, case study.
● **student's independent work:**	● **student's independent work:**
Learning the content of the lecture, taking notes; studying literature, preparing for a final exam.	Learning the content of the classes, taking notes, studying literature, preparing for the exam.

Formal requirements related to admitting students to classes:

Introductory subjects:	**Entrance requirements:**
● none	● the student has basic knowledge of logistics and projects, has mastered the ability to express oneself in speech, is able to use professional literature, is able to work both independently and in a team;

Subject objectives:

in terms of knowledge:

Get to know students:

- with concepts and methodology in the field of risk management in logistics projects;
- with new management concepts derived from risk management in logistics projects;
- with risk simulation models in logistics projects;
- with scenario methods in risk management of logistics projects;
- with computer simulations in risk management in logistics;

in terms of skills:

Teach students:

- applying risk management methods and tools in logistics projects;
- using risk simulation models in logistics projects;

- using scenario methods in risk management of logistics projects;
- creating computer simulations in risk management in logistics;
- teamwork;

in the field of social competences:

Develop students' social competences in the following areas:

- communication with the environment;
- design thinking skills to achieve established business and personal goals;
- compliance with ethical, moral and legal principles in professional work;
- developing the need for self-education for risk management in logistics projects;

Education content:

theoretical classes:

topic number	educational content	number of hours
		SS
1	The essence and importance of project management in logistics.	2
2	Basic project management standards.	4
3	Project management cycle models.	4
4	Selected tools and techniques for managing logistics projects.	4
5	Risk management in logistics projects.	2
6	Types of risk in logistics projects and processes.	2
7	Risk simulation models in logistics projects.	4
8	Scenario methods in risk management of logistics projects.	4
9	Computer simulations in risk management in logistics.	4
	Total theoretical classes:	**30**

practical:

topic number	educational content	number of hours
		SS
1	Practical skills classes will include content related to risk management in logistics projects, in terms of basic tools and techniques of logistics project management, risk management in logistics projects, including risk simulations in logistics projects, creating scenario methods in logistics project risk management in professional work - to ensure quality and solve problems in the organization.	30
	Total practical classes:	**30**

Total theoretical and practical classes:	**60**

Attention: the division concerns classes with direct participation of teachers or classes on an e-learning platform.

Abbreviations used: SS – full-time studies; SNS – part-time studies

Learning outcomes:

the category	num-ber	contents
knowledge	**W_01**	has advanced knowledge of risk management in logistics projects;
	W_02	knows advanced logistics project management tools and techniques;
skills	**U_01**	uses basic project management methods to ensure quality and solve problems in the organization;
	U_02	demonstrates an active attitude in team work, using the principles of risk management in logistics projects to identify and reduce waste in the organization, especially in production processes;
	U_03	presents own ideas, doubts and suggestions using specialized language; has developed interpersonal communication skills;
	U_04	cooperates with other people as part of risk management tasks in logistics projects;
social competences	**K_01**	critically evaluates the information provided and conveys one's own views and value system in the professional sphere, promotes risk management concepts in logistics projects in the organization and convinces others to take similar actions;
	K_02	develops professional achievements by taking optimal actions to improve their own and other people's work and disseminate good practices in the field of risk management in logistics projects;

Completion of the course/verification of learning outcomes:

form of assessment:	Exam
pass conditions and criteria:	The condition for passing the course is: ● active participation of students in classes, ● obtaining by students, in accordance with the criteria adopted by the lecturer, a positive grade in theoretical and practical classes, ● obtaining a positive grade in the exam.
method of passing theoretical classes:	
final assessment form:	Independent preparation and performance of an intellectual task during classes (choose from: a paper, a report on a narrow issue, a speech covering a narrow issue using a multimedia presentation, a speech covering a narrow issue in oral form).
evaluation criteria:	● 5.0 - the student completed the task in the form specified by the lecturer, and its substantive value is at a high level;

<table>
<tr><td></td><td colspan="4">

4.5 - the student completed the task in the form specified by the lecturer, and its substantive value is rather high, but there were minor shortcomings that do not significantly affect the overall substantive level of the task;
4.0 - the student completed the task in the form specified by the lecturer, and its substantive value is rather good, but there are shortcomings that do not significantly affect the overall substantive level of the task;
3.5 - the student did not complete the task in the form specified by the lecturer, and its substantive value is rather at a sufficient level, but there are shortcomings that significantly affect the overall substantive level of the task;
3.0 - the student completed the task in a form that differed significantly from the form specified by the lecturer, and its substantive value is rather at a sufficient level, but there were shortcomings that significantly affect the overall substantive level of the task;
2.0 – the student did not complete the task;

</td></tr>
<tr><td rowspan="2">method of calculating the rating and verification of learning outcomes:</td><td>item</td><td>method of verification</td><td>reference to effects</td><td>evaluation weight In %</td></tr>
<tr><td>O1</td><td>Independent preparation and completion of an intellectual task during classes</td><td>W_01; W_02; U_01; U_02; U_03; U_04; K_01; K_02</td><td>100%</td></tr>
<tr><td>method of calculating the final grade:</td><td colspan="4">$Ot = O1$</td></tr>
<tr><td colspan="5">How to pass practical classes:</td></tr>
<tr><td>final assessment form:</td><td colspan="4">The grade is calculated based on the lecturer's assessment of the frequency of involvement (participation) in class discussions, the substantive level of the statements and the critical approach to the discussed problem.</td></tr>
<tr><td>evaluation criteria:</td><td colspan="4">

5.0 - the student participated very often in the discussion, the substantive value of his statements was high and he approached the problem discussed critically
4.5 - the student often participated in the discussion, the substantive value of his statements was rather high and he approached the discussed problem rather critically
4.0 - the student often participated in the discussion, the substantive value of his statements was at a relatively good level and he was rather critical of the discussed problem
3.5 - the student rarely participated in the discussion, the substantive value of his statements was at an average level and he approached the problem discussed rather uncritically
3.0 - the student participated in the discussion sporadically, the substantive value of his statements was low and he approached the discussed problem uncritically
2.0 – the student did not participate in the discussions

</td></tr>
<tr><td rowspan="2">method of calculating the rating and verification of learning outcomes:</td><td>item</td><td>method of verification</td><td>reference to effects</td><td>evaluation weight In %</td></tr>
<tr><td>O1</td><td>Involvement (participation) in discussions during classes, substantive level of statements and</td><td>W_01; W_02; U_01; U_02; U_03; U_04; K_01; K_02</td><td>100%</td></tr>
</table>

		critical approach to the discussed problem.		
method of calculating the final grade:	On = O1			
How to pass the exam:				
final assessment form:	Multiple choice test. The grade is calculated based on the percentage of correct answers given by the student in the test prepared by the lecturer.			
evaluation criteria:	• 5.0 – over 70% correct answers to test questions; • 4.5 – from 66 to 70% of correct answers; • 4.0 – from 61 to 65% of correct answers; • 3.5 – from 56 to 60% of correct answers; • 3.0 – from 50 to 55% of correct answers; • 2.0 – less than 50% correct answers;			
method of passing the course:				
final assessment form:	Weighted average of grades from the exam and for practical and theoretical classes, taking into account the weight of ECTS points.			
method of calculating the rating and verification of learning outcomes:	**item**	**method of verification**	**reference to effects**	**evaluation weight ECTS**
	Ot	Theoretical assessment	W_01; W_02	2
	On	Practical assessment	W_01; W_02; U_01; U_02; U_03; U_04; K_01; K_02	3
	Are you	Exam grade	W_01; W_02; K_01; K_02	Nd.
method of calculating the final grade:	$Ok = 0{,}6xOe + 0{,}4x(Otx2 + Opx3)/5$			
Learning outcomes matrix for classes:				

number (symbol) of the learning outcome	**reference to learning outcomes for the field**
W_01	K1_W02; K1_W06; K1_W11; K1_U14
W_02	K1_W06; K1_W14
U_01	K1_U05; K1_U06
U_02	K1_U05; K1_U06
U_03	K1_U03; K1_U04
U_04	K1_U13

K_01	K1_K02; K1_K03; K1_K04; K1_K07
K_02	K1_K05

List of literature:

A. Literature required to finally pass the course (pass the exam):

- Risk management in logistics projects Smolska Małgorzata, Wiśniewski Tomasz, Zioło Katarzyna, Ed. University of Szczecin, 2019
- Witkowski, J., & Rodawski, B. (2007). The concept and typology of logistics projects. Materials Management and Logistics, (3), 2-6.
- Kaczmarek T.T.2010. Risk management. Interdisciplinary approach, Difin.
- Wieteska G. 2011. Risk Management in the Supply Chain on the B2b Market, Difin

B. Additional literature:

- Pisz, I., & Łapuńka, I. (2015). Project risk modeling and simulation. Materials Management and Logistics, (6), 10-21.
- Goździewska-Nowicka, A. (2015). Risk management in logistics projects. TTS Rail Transport Technology, 22.
- Kulińska, E. (2011). Risk analysis methods in logistics processes. Logistics (2).
- Staniec I., Niedźwiecki-Zawiła J. 2010: Operational risk management. C.H. Publishing House Beck.
- Monkiewicz J., Gąsiorkiewicz L.2010: Risk management of the organization's activities, C.H Beck

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Research and development projects

Class code and name:		**Form of assessment**	**Number of ECTS points**
code	**name**		
S.4.9	Research and development projects	CREDIT WITH GRADE	4

Field of study:	Logistics

Characteristics of classes:

study profile	**level of study**	**compulsory classes for the major**	**elective classes**	**semester**
practical	Bachelor's degree course	NO	not	WE

Discipline:	
Management and quality sciences	
Name of the unit conducting classes:	**People conducting classes:**
Department of Management	Persons designated in accordance with the course assignment for a given academic year

Division of learning time taking into account the student's workload:

forms of classes/ student's independent work	**number of hours**					**number of ECTS points**
	N (teacher)		**S (student)**		**SUM**	
	SS	**SNS**	**SS**	**SNS**		
Practical classes [total] CW30	**30**	**-**	**5**	**-**	50	2
● Introductory classes	2	-	-	-		
● Workshop exercises	28	-	-	-		
● Studying literature	-	-	3	-		
● Preparation for passing	-	-	2	-		
● **Practical classes [total] PZ 15**	**15**	**-**	**-**	**-**		
● Introductory classes	-	-	-	-		
● Practical exercises at the employer's	15	-	-	-		
● Summary classes - colloquium	-	-	-	-		
● Studying literature	-	-	-	-		
● Preparation of homework	-	-	-	-		
● Preparation for passing	-	-	-	-		
● Preparation for passing	-	-	-	-		
● SUM	**45**	**-**	**5**	**-**	**50**	**2**

N – classes with a teacher; S – student's independent work; SS – full-time studies; SNS – part-time studies.

Teaching methods:	
theoretical classes:	**practical:**
● **classes with teachers:**	● **classes with teachers:**

Not applicable	Presentation of the issues in practice, discussion, analysis of the situation.
● **student's independent work:**	● **student's independent work:**
Not applicable	Learning the content of classes, taking notes, studying literature, preparing to pass the course
Formal requirements related to admitting students to classes:	
Introductory subjects:	**Entrance requirements:**
● none	● the student has basic knowledge of logistics, has mastered the ability to express himself orally, is able to use professional literature, is able to work both independently and in a team;
Subject objectives:	
in terms of knowledge:	
Get to know students: ● with knowledge of understanding the economic, legal and social aspects of conducting projects in the organization and financing research and development activities;	
in terms of skills:	
Teach students: ● analysis and interpretation of project documentation and use of scientific literature related to a given problem; ● preparing a preliminary economic analysis of undertaken projects;	
in the field of social competences:	
Develop students' social competences in the following areas: ● responsibility for one's own work and readiness to comply with the principles of teamwork and responsibility for jointly performed tasks; ● leading a small team, setting goals and defining priorities to achieve the task. ● responsible performance of professional roles;	
Education content:	
practical:	

topic number	educational content	number of hours
		SS
1	**Introduction to project management:** essence of the project, types of projects, importance of projects in management, process approach as the basis for project management, project life cycle.	6

2	**Planning in project management:** project structure, project structure planning mode, project schedule, defining project milestones, critical chain technique, project risk management.	4
3	**Project management methodology:** systematization of project management methods, project management methodological approaches, project management techniques, project management methodologies.	4
4	**Institutions intermediating in the financing of research and development work in Poland**. Legal basis and amount of funding. Examples of projects that received support. Types of R&D work related to technological readiness levels (basic research, industrial research, development work, pre-implementation work).	4
5	**Project selection criteria** – eligibility and adequacy of costs, types of costs	4
6	**Formal and access criteria** (National Smart Specializations, management staff and project management, impact on the principle of sustainable development, aspects of intellectual property protection).	4
7	Passing the workshop classes	4
	Total workshop exercises:	30
Practical exercises at the employer's:		
1	Practical skills classes will include the content of project management, in particular logistics projects, which will allow you to improve skills related to the analysis and interpretation of project documentation and the development of a preliminary economic analysis of projects.	15
	Total practical classes (workshop exercises and practical exercises at the employer's):	**45**

Attention: the division concerns classes with direct participation of teachers or classes on an e-learning platform.

Abbreviations used: SS – full-time studies; SNS – part-time studies

Learning outcomes:

the category	number	Contents
knowledge	**W_01**	knows the terminology used in project management; has advanced knowledge in the field of research and development project management;
	W_02	knows the basic concepts and principles of professional ethics;
	U_01	is able to draw conclusions regarding a logistics project, analysis and assessment of a specific situation in the enterprise;
	U_02	presents own ideas, doubts and suggestions using specialized language; has developed interpersonal communication skills;
	U_03	cooperates with other people as part of project tasks;

social competences	**K_01**	critically evaluates the information provided and conveys one's own views and value system in the professional sphere;
	K_02	develops professional achievements by taking optimal actions to improve the work of one's own and other people and disseminate good practices in the field of project management;
Completion of the course/verification of learning outcomes:		
form of assessment:	Pass with grade (ZO)	
pass conditions and criteria:	The condition for passing the course is: obtaining by students, in accordance with the criteria adopted by the lecturer, a positive grade in practical classes, both in workshop exercises and practical exercises at the employer. **Workshop exercises:** Independent preparation and performance of an intellectual task during classes (choose from: a paper, a report on a narrow issue, a speech covering a narrow issue using a multimedia presentation, a speech covering a narrow issue in oral form). **Practical exercises at the employer's:** The grade is calculated based on the lecturer's assessment of the frequency of involvement (participation) in class discussions, the substantive level of the statements and the critical approach to the discussed problem.	
How to pass practical classes:		
final assessment form:	Arithmetic average of grades for workshop exercises and practical exercises at the employer.	
evaluation criteria:	**Workshop exercises:** ● 5.0 - the student completed the task in the form specified by the lecturer, and its substantive value is at a high level; ● 4.5 - the student completed the task in the form specified by the lecturer, and its substantive value is rather high, but there were minor shortcomings that do not significantly affect the overall substantive level of the task; ● 4.0 - the student completed the task in the form specified by the lecturer, and its substantive value is rather good, but there are shortcomings that do not significantly affect the overall substantive level of the task; ● 3.5 - the student did not complete the task in the form specified by the lecturer, and its substantive value is rather at a sufficient level, but there are shortcomings that significantly affect the overall substantive level of the task; ● 3.0 - the student completed the task in a form that differed significantly from the form specified by the lecturer, and its substantive value is rather at a sufficient level, but there were shortcomings that significantly affect the overall substantive level of the task; ● 2.0 – the student did not complete the task; **Practical exercises at the employer's:** ● 5.0 - the student participated very often in the discussion, the substantive value of his statements was high and he approached the problem discussed critically	

	• 4.5 - the student often participated in the discussion, the substantive value of his statements was rather high and he approached the discussed problem rather critically • 4.0 - the student often participated in the discussion, the substantive value of his statements was at a relatively good level and he was rather critical of the discussed problem • 3.5 - the student rarely participated in the discussion, the substantive value of his statements was at an average level and he approached the problem discussed rather uncritically • 3.0 - the student participated in the discussion sporadically, the substantive value of his statements was low and he approached the discussed problem uncritically • 2.0 – the student did not participate in the discussions

method of calculating the rating and verification of learning outcomes:	**item**	**method of verification**	**reference to effects**	**evaluation weight In %**
	O1	Workshop exercises	W_01; W_02; U_01	50%
	O2	Practical exercises at the employer's	W_01; W_02; U_01; U_02: U_03; K_01: K_02	50%
method of calculating the final grade:	Op=0.5xO1+0.5xO2			
method of passing the course:				
final assessment form:	Grade for practical classes			
method of calculating the rating and verification of learning outcomes:	**item**	**method of verification**	**reference to effects**	**evaluation weight In %**
	On	Practical	W_01; W_02; U_01; U_02: U_03; K_01: K_02	100%
method of calculating the final grade:	Ok=Op			
Learning outcomes matrix for classes:				

number (symbol) of the learning outcome	**reference to learning outcomes for the field**
W_01	K1_W01
W_02	K1_W03
U_01	K1_U06; K1_U11
U_02	K1_U04; K1_U07
U_03	K1_U12; K1_U13
K_01	K1_K03; K1_K06

K_02	K1_K04; K1_K05

List of literature:

A. Literature required to finally pass the course (pass the exam):

- Wirkus M., Roszkowski H., Dpowiedz E., *Project management*, PWE, Warsaw 2014.
- CabałaP. (ed.), *Methods of improving project management processes in the organization*, Difin, Warsaw 2016.
- Trocki M. (red), *Project management methodologies and standards*, PWE, Warsaw 2017.
- Trotsky M., *Modern project management*, PWE, Warsaw 2013.
- Barker S., Rob C., *Project management*, PWE, Warsaw 2010.

B. Additional literature:

- Competition documentation of the selected NCBR open competition
- Kandefer-Winter K., Nadskakuła O., *Communication in project management*, CeDeWu, Warsaw 2016.

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Professional internships during studies

PZK. TRAINEESHIP – specialized

Class code and name:		**Form of assessment**	**Number of ECTS points**
code	**name**		
PZK.	Traineeship - specialised	CREDIT WITH GRADE	15

Field of study: Logistics

Characteristics of classes:

study profile	**level of study**	**compulsory classes for the major**	**elective classes**	**semester**
practical	Bachelor's degree course	NO	not	II

Discipline:

Management and quality sciences

Name of the unit conducting classes:	**People conducting classes:**

Department of Management	Persons designated in accordance with the course assignment for a given academic year

Division of learning time taking into account the student's workload:

forms of classes/ student's independent work	number of hours					number of ECTS points
	N (teacher)		P		SUM	
	SS	SNS	SS	SNS		
Practical classes [SUM]	**-**	**-**	**375**	**375**	375	15
● getting acquainted with the specific functioning of the institution	-	-	30	30		
● getting acquainted with the tasks and legal basis for the functioning of the institution	-	-	30	30		
● getting acquainted with the organization of work of the management and task teams (specialized) of the institution	-	-	50	50		
● getting acquainted with the institution's operating procedures, substantively related to the objectives of the practice	-	-	40	40		
● getting acquainted with the types and methods of keeping documentation substantively related to the goals of the practice	-	-	50	50		
● performing basic administrative and substantive tasks (under the supervision of the person responsible for the care of the trainee on behalf of the institution)	-	-	175	175		
SUM:	**-**	**-**	**375**	**375**	**375**	**15**

N – classes with a teacher; S – student's independent work; SS – full-time studies; SNS – part-time studies.

Teaching methods:

theoretical classes:	**practical:**
● **classes with teachers:**	● **classes with teachers:**
not applicable	not applicable
● **student's independent work:**	● **student's independent work:**
not applicable	not applicable

Formal requirements related to admitting students to classes:

Introductory subjects:	**Entrance requirements:**
completed the first semester of studies	**formal requirements -** completed first semester, selection of the place of internship (consent to the internship of the institution where the student wants to do the internship), preparation of a referral from the University and an agreement concluded by the University with the institution where the student will do the internship **entry requirements**: the student has basic knowledge of broadly understood management and logistics necessary in the institution where the internship will take place, and also has the ability to express himself orally and in writing on substantive issues and is able to work in a group

Subject objectives:

in terms of knowledge:

- familiarize students with the specific functioning of the institution, including its regulations (statute)
- familiarize students with the tasks and legal basis for the functioning of the institution where they complete their professional practice
- familiarize students with the organization of work of management and teams of specialists involved in logistic tasks carried out for the institution where they do their internship
- familiarize students with the types and methods of keeping documentation related to logistics tasks in the institution where they do their internship

in terms of skills:

- teach students to carry out specialized professional tasks using the knowledge, skills and social competences acquired during their studies
- teach them to follow the rules and other regulations (legal, ethical, moral) in force in the institution where they practice
- prepare them to work in teams of logistics specialists

in the field of social competences:

- shape students' readiness to fulfill professional tasks in a professional and responsible manner, while maintaining the principles of professional ethics
- develop readiness to think and act in an entrepreneurial and innovative way, including taking actions in the field of self-education and personal development

Education content:

practical:

topic number	**educational content**	**number of hours**	
		SS	**SNS**
1	Getting to know the specifics of the functioning of the institution where the student is doing the internship.	30	30
2	Getting to know the tasks and legal basis for the functioning of the institution, in which the student completes his/her internship.	30	30

3	Getting to know the organization of work of management and task and specialist teams involved in tasks substantively related to the goals of the practice.	50	50
4	Getting to know the operating procedures of the institution, substantively related to the objectives of the practice.	40	40
5	Getting to know the types and methods of keeping documentation substantively related to the goals of the practice.	50	50
6	Performing basic administrative and substantive tasks (under the supervision of the person responsible for the care of the trainee on behalf of the institution).	175	175
	Total practical classes:	**175**	**175**
	Total theoretical and practical classes:	**175**	**175**

Attention: the division concerns classes with direct participation of teachers or classes on an e-learning platform.

Abbreviations used: SS – full-time studies; SNS – part-time studies

Learning outcomes:

the category	num-ber	contents
knowledge	**W_01**	knows and understands theoretical and practical aspects of logistics activities at all organizational levels of the institution in which the internship takes place, including factors determining the effectiveness of management
	W_02	knows and understands various types of personal and structural connections functioning within the structures of the institution where the internship takes place, as well as its organization and relations with the socio-economic environment
	W_03	knows and understands ethical, moral and legal rules, norms and principles regulating the functioning of the institution in which he practices, as well as the work and management principles applicable therein
skills	**U_01**	is able to perform professional tasks in the institution where the internship takes place, based on theoretical knowledge and practical skills acquired during studies
	U_02	he can use traditional and modern methods, techniques and tools in practice, including IT technologies allowing for management optimization and supporting logistic processes in the institution where the internship takes place
	U_03	he can use normative systems correctly, including ethical, moral and legal rules, norms and principles closely related to the practice of operation in the institution where the internship takes place
	U_04	can use concepts, facts and various specialist information freely in speech and writing when communicating with various audiences in various professional situations encountered in the institution, where he/she practices, including completing documentation related to logistics management practice

	U_05	is able to plan and organize the work of task teams operating in the institution where the internship takes place
social competences	**K_01**	is ready to perform professional tasks in a professional and responsible manner, including taking on other challenges and tasks for the institution where he or she practices
	K_02	is ready to thinking and acting in an entrepreneurial and innovative way in the scope of tasks undertaken for the organization in which he will be employed, as well as tasks related to the implementation of his own life goals, including personal and professional development

Completion of the course/verification of learning outcomes:

form of assessment:	Pass with grade
pass conditions and criteria:	The condition for passing the course is: • having a positive opinion about the course of professional practice • implementation of the internship program • positive result of the interview verifying the degree of achievement of the expected learning outcomes

How to pass practical classes:

final assessment form:	Weighted average grades for knowledge, skills and social competences			
evaluation criteria:	Opinion on the course of the internship and a verification interview			
method of calculating the rating and verification of learning outcomes:	**item**	**method of verification**	**reference to effects**	**evaluation weight In %**
	O1	knowledge	W_01, W_02, W_03	30
	O2	social skills and competences	U_01, U_02, U_03, U_04, U_05, K_01, K_02	70
method of calculating the final grade:	$Op = 0.3xO1 + 0.7xO2$			

method of passing the course:

final assessment form:	Grade for practical classes			
method of calculating the rating and verification of learning outcomes:	**item**	**method of verification**	**reference to effects**	**evaluation weight In %**
	On	practical	W_01, W_02, W_03, U_01, U_02, U_03, U_04, U_05, K_01, K_02	100

method of calculating the final grade:	$Ok = Op$
Learning outcomes matrix for classes:	
number (symbol) of the learning outcome	**reference to learning outcomes for the field**
W_01	K1_W01, K1_W02, K1_W11,
W_02	K1_W04, K1_W06, K1_W08, K1_W09
W_03	K1_W03
U_01	K1_U01, K1_U13
U_02	K1_U05, K1_U11, K1_U19
U_03	K1_U10
U_04	K1_U03, K1_U04, K1_U16
U_05	K1_U13, K1_U14
K_01	K1_K03
K_02	K1_K04, K1_K05
List of literature:	
A. Literature required to finally pass the course (pass the exam):	
•	

PZS. Vocational internships – specialized

Class code and name:		**Form of assessment**	**Number of ECTS points**
code	**name**		
PZS	Vocational internships – specialized – Green Supply Chains	CREDIT WITH GRADE	15

Field of study:	Logistics

Characteristics of classes:

study profile	**level of study**	**compulsory classes for the major**	**elective classes**	**semester**
practical	Bachelor's degree course	NO	not	IV

Discipline:	
Management and quality sciences	
Name of the unit conducting classes:	**People conducting classes:**
Department of Management	Persons designated in accordance with the course assignment for a given academic year

Division of learning time taking into account the student's workload:

forms of classes/ student's independent work	**number of hours**					**number of ECTS points**
	N (teacher)		**P**		**SUM**	
	SS	**SNS**	**SS**	**SNS**		
Practical classes [SUM]					375	15
● getting acquainted with the specific functioning of the institution	-	-	30	30		
● getting acquainted with the tasks and legal basis for the functioning of the institution	-	-	30	30		
● getting acquainted with the organization of work of the management and task teams (specialized) of the institution	-	-	30	30		
● getting acquainted with the institution's operating procedures, substantively related to the objectives of the practice	-	-	30	30		
● getting acquainted with the types and methods of keeping documentation substantively related to the goals of the practice	-	-	30	30		
● performing basic administrative and substantive tasks (under the supervision of the person responsible for the care of the trainee on behalf of the institution)	-	-	225	225		
SUM:			**375**	**375**	**375**	**15**

N – classes with a teacher; S – student's independent work; SS – full-time studies; SNS – part-time studies.

Teaching methods:	
theoretical classes:	**practical:**
● **classes with teachers:**	● **classes with teachers:**
not applicable	not applicable

• **student's independent work:**	• **student's independent work:**
not applicable	student's independent work: performing basic administrative and substantive tasks under the supervision of a person responsible for supervising a student undergoing an internship on behalf of the institution, preparing documentation confirming the student's professional internship
Formal requirements related to admitting students to classes:	
Introductory subjects:	**Entrance requirements:**
completed third semester of studies	**formal requirements -** completed third semester, selection of the place of internship (consent to the internship of the institution where the student wants to do the internship), preparation of a referral from the University and an agreement concluded by the University with the institution where the student will do the internship **entry requirements**: the student has basic knowledge of broadly understood management and logistics necessary in the institution where the internship will take place, and also has the ability to express himself orally and in writing on substantive issues and is able to work in a group
Subject objectives:	
in terms of knowledge:	
• familiarize students with the specific functioning of the institution, including its regulations (statute); • familiarize students with the tasks and legal basis for the functioning of the institution where they undergo professional practice; • familiarize students with the specifics of the functioning of warehouse management in a business entity, logistic customer service, and warehouse space management; • familiarize students with the types and methods of keeping warehouse, supply and shipping documentation, the principles of cooperation between the warehouse and forwarding and transport departments, and inventory management methods;	
in terms of skills:	
• teach students to carry out specialized professional tasks using the knowledge, skills and social competences acquired during studies; • prepare to work in IT systems supporting warehouse operation, keeping documentation, making analyzes and reports on the implementation of warehouse tasks; • prepare them to work in teams of specialists, including to play a managerial role in them;	
in the field of social competences:	
• develop students' readiness to perform professional tasks in a professional and responsible manner, while maintaining the principles of professional ethics; • develop readiness to think and act in an entrepreneurial and innovative way, including taking actions in the field of self-education and personal development;	
Education content:	
practical:	

topic number	educational content	number of hours	
		SS	SNS
1	Getting acquainted with the specific functioning of the institution where the student does the internship, health and safety rules and work regulations.	30	30
2	Getting to know the tasks and legal basis for the functioning of the institution, in which the student completes his/her internship.	30	30
3	Getting to know the organization of the institution's work, IT systems supporting warehouse work and the method of circulation of logistic documentation.	30	30
4	Familiarization with warehouse operating procedures, the warehouse quality management system and methods of controlling the warehouse process.	30	30
5	Getting to know the work of individual task teams responsible for implementing the warehouse process.	30	30
6	Performing basic administrative and substantive tasks in the field of warehouse management (under the supervision of the person responsible for the care of the trainee on behalf of the institution).	225	225
	Total practical classes:	**375**	**375**
	Total theoretical and practical classes:	**375**	**375**

Attention: the division concerns classes with direct participation of teachers or classes on an e-learning platform.

Abbreviations used: SS – full-time studies; SNS – part-time studies

Learning outcomes:

the category	number	contents
knowledge	**W_01**	knows and understands advanced theoretical and practical aspects of logistics activities at all organizational levels of the institution in which the internship takes place, including factors determining the effectiveness of management
	W_02	knows and understands at an advanced level, various types of personal and structural connections functioning within the structures of the institution where the internship takes place, as well as the organization, circulation of documents and information, and IT systems used in the institution
	W_03	knows and understands at an advanced level, ethical, moral and legal rules, norms and principles regulating the functioning of the organization in which he or she practices
	U_01	is able to perform professional tasks in the field of green supply chains, based on theoretical knowledge and practical skills acquired during studies
	U_02	he can use traditional and modern methods, techniques and tools in practice, including IT technologies allowing for management optimization and supporting logistic processes in the institution where the internship takes place

	U_03	he can use normative systems correctly, including ethical, moral and legal rules, norms and principles closely related to the practice of operation in the institution where the internship takes place
	U_04	can use concepts, facts and various specialist information freely in speech and writing when communicating with various audiences in various professional situations encountered in the institution, n which he practices, including completing specialist documentation related to the practice of logistics management, in particular regarding the topic of green supply chains
	U_05	is able to plan and organize the work of task and specialist teams operating in the institution where the internship takes place
social competences	**K_01**	is ready to perform professional tasks in a professional and responsible manner, including taking on other challenges and tasks for the institution where he or she practices
	K_02	is ready to thinking and acting in an entrepreneurial and innovative way in the scope of tasks undertaken for the organization in which he will be employed, as well as tasks related to the implementation of his own life goals, including personal and professional development

Completion of the course/verification of learning outcomes:

form of assessment:	Pass with grade
pass conditions and criteria:	The condition for passing the course is: • having a positive opinion about the course of professional practice • implementation of the internship program • positive result of the interview verifying the degree of achievement of the expected learning outcomes

How to pass practical classes:

final assessment form:	Weighted average grades for knowledge, skills and social competences			
evaluation criteria:	Opinion on the course of the internship and a verification interview			
method of calculating the rating and verification of learning outcomes:	**item**	**method of verification**	**reference to effects**	**evaluation weight In %**
	O1	knowledge	W_01, W_02, W_03	30
	O2	social skills and competences	U_01, U_02, U_03, U_04, U_05, K_01, K_02	70
method of calculating the final grade:	$Op = 0.3xO1 + 0.7xO2$			

method of passing the course:

final assessment form:	Grade for practical classes			
method of calculating the rating and verification of learning outcomes:	**item**	**method of verification**	**reference to effects**	**evaluation weight In %**
	On	practical	W_01, W_02, W_03, U_01, U_02, U_03, U_04, U_05, K_01, K_02	100
method of calculating the final grade:	$Ok = Op$			

Learning outcomes matrix for classes:

number (symbol) of the learning outcome	reference to learning outcomes for the field
W_01	K1_W01, K1_W02, K1_W11,
W_02	K1_W04, K1_W06, K1_W08, K1_W09
W_03	K1_W03
U_01	K1_U01, K1_U13
U_02	K1_U05, K1_U11, K1_U19
U_03	K1_U10
U_04	K1_U03, K1_U04, K1_U16
U_05	K1_U13, K1_U14
K_01	K1_K03
K_02	K1_K04, K1_K05

List of literature:

A. Literature required to finally pass the course (pass the exam):

-

Contact:	
contact person:	Employee of the IBiZ secretariat
phone:	59 306 76 04 (secretariat)
e-mail:	sekretariat.ibiz@upsl.edu.pl (secretariat)

Evaluation Concept

The 3LoE project aims to promote work-based learning through the introduction of dual vocational training at different educational levels (EQF 3-6), especially in countries that have used school-based vocational training until this point in time. In principle, in the case of dual vocational education up to 75% of the entire training period is spent in companies.

Akademia Pomorska w Słupsku (Pomeranian University in Słupsk, Poland, PP6) implements a three-year dual bachelor degree “Logistics - Green Supply Chains”, realizing a fundamental element of dual studies (higher education level). It is assumed that after the completion of the training, students will have mastered knowledge and skills at EQF 6, and therefore will become highly skilled professionals, ready to compete for the highest position in their companies.

It is worth noting that dual degrees (Bachelor’s or Master’s), realised in cooperation with a company, are relatively rare in Poland. It is also worth mentioning that the legal bases regulating the opening and running of dual studies are general and are encapsulated in Article 62 of the Law on Higher Education (DzU 2018 poz. 1668 - Journal of Laws 2018 item 1668).
[https://isap.sejm.gov.pl/isap.nsf/download.xsp/WDU20180001668/U/D20181668Lj.pdf]

1. The Aim of the Evaluation

The general aim of the study is to evaluate the effectiveness of the implementation by PP6 of the three-year Bachelor program “Logistics - Green Supply Chains”, realized within the Project titled “Three-level Centres of Professional Excellence: Qualification, Entrepreneurship and Innovation in the Green Economy” (3LoE). The conclusions of the evaluation research will contribute to improving specific courses, as well as the quality, and especially the effectiveness of teaching, both at university, and in company. The evaluation will also show the limitations of the training model, and indicate the direction for further activities and curriculum revision (if necessary).

A training management cycle can be divided into three major steps: *curriculum design (planning), implementation, and evaluation*. The evaluation is the final step of the training management cycle. Evaluation of any training is one of the main components of a training program/ curriculum. The results of the training evaluation are reflected in the next phase of training planning to improve future training programs/ curricula. This in particular refers to curriculum improvement, as an obligatory element in the planning of study programs at Polish universities. The improvement work occurs at a number of levels and involves a number of stakeholders: students, academic teachers, program evaluation commissions, and representatives of external stakeholders, such as companies. Prior to any curriculum evaluation, training/ course evaluation takes place in order to provide useful information for:

- trainers/ teachers – to gain insight into the effectiveness of activities, with a view of improving activities planned throughout the training course.
- university management – to gain insight into the effectiveness of the training, with a view of improving curricula.

What is an Evaluation?

Several definitions of evaluation have been offered, and the following are some of those most commonly used:

> An evaluation is the systematic and objective assessment of an ongoing or completed project, program or policy, its design, implementation and results. The aim is to determine the relevance and fulfillment of objectives, development efficiency, effectiveness, impact and sustainability[10].

A program evaluation is the systematic collection of information about the activities, characteristics, and outcomes of programs to make judgments about the program, improve program effectiveness, and/or inform decisions about future programming.[11]

There are many different types of evaluations depending on the object being evaluated and the purpose of the evaluation.

Perhaps the most important basic distinction in evaluation types is that between *formative* and *summative* evaluation. Formative evaluations strengthen or improve the object being evaluated - they help form it by examining the delivery of the program or technology, the quality of its implementation, and the assessment of the organizational context, personnel, procedures, inputs, etc. Summative evaluations, in contrast, examine the effects or outcomes of some object - they summarize it by describing what happens subsequent to delivery of the program or technology; assessing whether the object can be said to have caused the outcome; determining the overall impact of the causal factor beyond only the immediate target outcomes; and, estimating the relative costs associated with the object.

Formative evaluation includes several evaluation types:

- *needs assessment* determines who needs the program, how great the need is, and what might work to meet the need
- *evaluability assessment* determines whether an evaluation is feasible and how stakeholders can help shape its usefulness
- *structured conceptualization* helps stakeholders define the program or technology, the target population, and the possible outcomes

[10] Source: Glossary of Key Terms in Evaluation and Results Based Management.
[11] Source: Patton, M.Q. (1997). Utilization-focused Evaluation: The New Century Text (3rd ed.). Thousand Oaks, CA: Sage.

- *implementation evaluation* monitors the fidelity of the program or technology delivery
- *process evaluation* investigates the process of delivering the program or technology, including alternative delivery procedures

Summative evaluation can also be subdivided:

- *outcome evaluations* investigate whether the program or technology caused demonstrable effects on specifically defined target outcomes
- *impact evaluation* is broader and assesses the overall or net effects -- intended or unintended -- of the program or technology as a whole
- *cost-effectiveness and cost-benefit analysis* address questions of efficiency by standardizing outcomes in terms of their dollar costs and values secondary analysis reexamines existing data to address new questions or use methods not previously employed
- *meta-analysis* integrates the outcome estimates from multiple studies to arrive at an overall or summary judgement on an evaluation question[12].

2. Five Steps of Training Evaluation

The processes of dual Bachelor degree evaluation can be divided into five steps:

1. identification of the purposes of evaluation.
2. selection of the evaluation methods.
3. design of the evaluation tools.
4. data collection data.
5. analysis of results and drafting of the results report. and analyze and report results.

Step 1: Identification of the Purposes of Evaluation

Before developing evaluation systems, the purposes of evaluation must be determined. These will affect the types of data and the data collection methods. In our case, the main objective of evaluating the dual Bachelor degree “Logistics - Green Supply Chains”, offered by PP6, is to determine the effectiveness of the course and the curriculum (=study program). Evaluation can help to gain an insight into the workings of past trainings/ courses. Evaluations also provide an insight into those elements of the program/ curriculum, i.e. activities and methods in a training that were successful, were not particularly successful or failed. It also informs whether the program/curriculum as a whole fulfils/-ed its goals. It also sets the ground for improvement, including all necessary changes to program/curriculum and training/ teaching methods.

The following purposes of evaluating trainings are:

- To determine whether the objectives of the course were achieved.

[12] Souce: Patton, M.Q. (1997). Utilization-focused Evaluation: The New Century Text (3rd ed.). Thousand Oaks, CA: Sage.

- To assess the degree to which the training/ course met the expectations of participants.
- To see how the knowledge and skills learned in the training/ course are put into practice.
- To assess the results and impacts of the training/course programs/ curricula.
- To assess the effectiveness of the trainings/ courses and individual activities, in particular as regards professional qualifications of participants and the skills acquired by trainees that can be used by them in their work.
- To assess whether the course programs/ curricula were properly implemented.
- To identify the strengths and weaknesses of the trainings/ courses in general.
- To assess whether the course programs/ curricula were suitable in terms of the training contents, timing, participants and other aspects.
- To find the weak points of the course programs/ curricula and suggest solutions for improvement.

Step 2: Selection of the Evaluation Method

One of the most commonly used methods for evaluating training programs is the four levels of evaluation by D. L. Kirkpatrick. According to his concept, capacity development is realized by the four sequential steps:

1. **Reaction** - evaluation on this level measures how participants react to the training program. It is important to get a positive reaction. Although a positive reaction may not ensure learning, if participants do not react favourably, they probably will not be motivated to learn.
2. **Learning** - evaluation on this level measures the extent to which participants change attitudes, improve knowledge, and/or increase skills as a result of attending the training program. One or more of these changes must take place if a change in behaviour is to happen.
3. **Behaviour** - evaluation on this level measures the extent to which change in participants' behaviour has occurred because of attending the training program. In order for change to take place, four conditions are necessary:
    - The person must have a desire to change.
    - The person must know what to do and how to do it.
    - The person must work in the right climate.
    - The person must be rewarded for changing.
4. **Results** - evaluation on this level measures the final results that occurred because the participants attended the training program. Examples of the final results include increased production, improved quality and decreased costs. It is important to recognize that these results are the reason for having some training programs. (Source: *Kirkpatrick (2006) Evaluating Training Programs)*

In the present setting, the evaluation is extended beyond the program/curriculum assessment to also include the implementation and the effects of the implementation of the dual Bachelor degree carried out by PP6. Therefore, the evaluation also includes

the assessment of the outcomes important for teachers/ instructors, school managers (headteachers) and other stakeholders, such as local companies or authorities. Since different parties perform different roles in the trainings/ courses, the evaluation scope will differ accordingly.

Step 3: Design of the Evaluation Tools

Various evaluation tools can be selected depending on the purposes and methods of evaluation:

- Questionnaires
- Surveys
- Tests
- Interviews
- Focus group discussions
- Observations
- Performance records

From the perspective of the evaluation of the implementation of dual Bachelor studies (WP5 A5.2), the most suitable evaluation tool to evaluate the programme at university is a written questionnaire, consisting of both closed and open-end questions. The inclusion of the two types of questions provides both quantitative, but also qualitative (more in-depth) insights into the effectiveness of the training. To evaluate the impact dual Bachelor studies is expected to have on the companies, an interview with company representatives will be carried out.

The questionnaire is probably the most common form of evaluating training programs to evaluate the expectations (initial evaluation) as well as reactions of participants and trainers who took part in the training (midway or final evaluation).

In the current project, in order to evaluate the dual Bachelor Program “Logistits - Green Supply Chains”, the questionnaire tool will be used:

- at the beginning of the training (initial evaluation) - academic year 2022/2023 (1st semester),
- in year 2. of the training (midway evaluation) - academic year 2023/2024 (3rd semester).

Such a scheme of evaluation is important for quality assurance of the course, since it gives an important insight into the progress that has been made, but also points to the elements of the training that can still be improved.

The parties involved in the evaluation using the questionnaire tool are:

- the participants (trainees),
- the trainers (teachers).

Initial evaluation is mainly aimed at analysing the expectations of participants, their motivation, and their educational background, while on the part of trainers, it mainly assesses their preparedness level and their evaluation of the program/ curriculum to be applied.

Midway evaluation aims at the assessment of the training, its progress, including the compliance of activities with the program/ curriculum, and the training methods applied. In particular, the evaluation focuses on the appropriateness of the content and methods used, usefulness of the course as a whole and the effectiveness of training activities/ tools in gaining new knowledge/ skills.

Initial and midway evaluations set the important points of reference for the final evaluation of the study program.

The interview is seen as a qualitative element of evaluation, which in some studies can provide invaluable insight into the true nature of the problem evaluated. This tool is especially useful in social sciences, where attitude may play an important role. Interviews allow the researcher to expand from the initial questions to reach the detail that is sometimes difficult to elicit through questionnaires. Flexibility is the major advantage when it comes to the evaluation of complex social matters. From the perspective of the current evaluation scheme, the interview is the best tool to be used for the elicitation of qualitative information from company representatives.

Step 4: Data Collection

To improve the effectiveness of questionnaire data collection, the following recommendations should be followed:

- *Choose the appropriate form of the questionnaire*. It is suggested that the electronic form of the questionnaire is used. This will allow automatic summary of closed questions and will gather answers to open-ended questions in one database.
- *Keep responses anonymous,* as it allows the participants to feel open and comfortable to give comments that can help gather more reliable data, which in turn may be used to improve future programs/ curricula.
- *Distribute questionnaire forms in advance* – Depending on the object of analysis/ review and the scope of evaluation, questionnaires should be distributed a few days in advance so as to allow participants to familiarise themselves with the questions and to provide more in-depth answers to open-ended questions. Final assessment questionnaires should be distributed, if possible, in the final weeks of the training. This will allow for more generalised review of the entire training process.

- *Explain the purpose of the questionnaire and how the information will be used* - This will help improve the response rate and encourage participants to make comments that can be useful to improve future trainings/ courses.

- *Allow enough time for completing the questionnaire* – While initial evaluation does not require much time to complete, since it measures the initial state and the expectations, the final evaluation is more thorough and focuses on the training that has been completed throughout a\ period of three years. Therefore, participants need more time to acquaint themselves with the questions, and to recall essential information in the form of a feedback on the content, the methods applied and the effectiveness of the training in general.

- *Provide assistance*. If translation is necessary, questionnaires should be translated into the mother tongue of the participants. In the case of participants with disabilities, all necessary forms of support should be provided.

Step 5: Analysis of results and drafting of the results report.

The analysis of the data gathered may progress in a variety of ways. There are a number of statistical software programs available for such analyses. However, any analysis should be as simple as possible and limited to what is necessary to draw the required conclusions from the data. After knowing what kind of information will be relevant and useful to the primary users, the last step in the evaluation process is to develop an evaluation report. In the present project, the report will be drafted on the basis of initial and midway evaluation, as well as an interview with company representatives. The conclusions of the report should be used to improve the training/ course, curriculum, its organisation, the training methods used, etc.

Figures should be used to present statistical and complex data fairly quickly and easily. *Pie charts* and *bar charts* are among commonly used figures. Bar charts work better when many categories are compared, and relative magnitude is to be shown. Textual paragraphs should be used where appropriate.

3. Evaluation report outline

After knowing what kind of information will be relevant and useful to the primary users, you can develop an evaluation report outline.

Summary

- Purpose of Evaluation
- Addressees of the Evaluation
- Major findings and recommendations

Training/Program Description

- Training/ program background
- Training/ program goals/objectives
- Training/program participants
- Training/program activities (general overview)

Evaluation Design and Methods
- Purpose of the Evaluation
- Evaluation designs
- Data collection methods

Findings and Results
- Description of how the findings are organized (e.g., by evaluation questions, themes/issues)
- Results of analyses of quantitative and/or qualitative data collected

Recommendations
- Recommendations for action based on these conclusions, in particular in relation to the training program/ curriculum, methods used, etc.

Appendices
- Questionnaires pre/post tests
- Interview questions, including additional questions developed during the interviews.

4. Data Sources

The conclusions of the evaluation research will contribute to improving the quality, and especially the effectiveness of dual Bachelor degree program, show the limitations of the adopted dual model and indicate the direction for further program development. This may be particularly useful when the evaluation is undertaken at a point where quality improvement is still possible. In the case of study programs at universities, any changes require a specific internal procedure, and any improvements take effect from the new study cycle.

Logistics - Green Supply Chains, implemented by Pomeranian University in Słupsk (PP6), is a three-year dual Bachelor degree study program. The studies end with the Bachelor of Arts degree in Logistics (speciality: Green Supply Chains). The degree allows participants to continue their university studies at Master's degree programs. The Bachelor's degree marks the attainment of higher education, which marks the high level of expertise and is also a condition for employment at higher managerial positions or even an entry requirement for some other professions.
The study program in question envisages a total of 1,819 hours of study contact hours, of which 165 hours are realized in companies as specialized training on top of 750 hours of traineeships in companies. This means that students will spend 915 hours being trained at companies.

Evaluation of dual Bachelor study program will be realized according to the following agenda:
- initial questionnaire: October/ November 2022
- midway questionnaire: February/ March 2024
- Interview with companies: February/ March 2023
- draft of the final report: 1 May 2024
- final report: 30.06.2024

(I) According to the methodology presented above, four questionnaires will be administered:

Two written surveys (questionnaires) of participants:

- ☐ one at the beginning of the studies (initial evaluation – see Appendix 1), and
- ☐ one at midway of the studies (midway evaluation - see Appendix 2)

Participants will be asked to fill out questionnaires in the first weeks of the studies, and in the middle of the studies in the academic year of 2023/2024. In the midway evaluation, participants will be able to assess the quality of studies (to date) in its various aspects.

The current evaluation constitutes quality control of the study program and the level of satisfaction of its participants. Satisfaction with the course and program content, courses, and thus the efficiency on the "level of response" is a prerequisite for proper motivation to learn and consequently to high efficiency to the next level.

The initial evaluation questionnaire is divided into two parts:

(1) evaluation of motivation to participate in the studies,
(2) evaluation of the expectations of the participant.

The midway evaluation questionnaire is divided into three parts:

(1) evaluation of the motivation measured half-way through the training,
(2) evaluation of satisfaction with the training content,
(3) evaluation of the teaching staff and the organization of the studies.

Two written surveys (questionnaires) of teaching staff participating in the training:

- ☐ one at the beginning of the training (initial evaluation – see Appendix 3)
- ☐ one at midway of the training (midway evaluation – see Appendix 4).

All teachers will be asked to fill out questionnaires in the first months of the training (initial evaluation), and half-way through the training (midway evaluation).

The initial evaluation is divided into two parts:

(1) evaluation of the study program/ curriculum,
(2) evaluation of the preparedness to carry out course activities.

The midway evaluation is divided into three parts:

(1) evaluation of the content of the study program and its organisation,
(2) evaluation of the students participation in the course(s).

NOTE: All questionnaires will be administered in the online form. Assistance to students will be provided, if necessary (see above Step4: Data collection).

(II) The interview will be carried out with representatives of companies to learn about the impact of the dual Bachelor degree program on their businesses. Since the major part of training in companies will take place after the conclusion of the project, the interview is aimed at evaluating:

- the value of the innovative dual Bachelor degree study in comparison to other types of qualification-raising forms of training;
- the impact of the dual Bachelor program on the company;
- the value (and quality) of cooperation with the local university;
- the preparedness of companies to continue dual trainings in the future.

5. Appendix 1 SURVEY OF PARTICIPANTS A[13] (INITIAL EVALUATION QUESTIONNAIRE)

Dear Participant,

The objective of the study is to evaluate your motivation and expectations related to dual Bachelor studies, realised by Akademia Pomorska w Słupsku (PP6), within the Project "Three-level Centres of Professional Excellence: Qualification, Entrepreneurship and Innovation in the Green Economy (3LOE)".

Please, take a few minutes and fill this evaluation form. Your comments and suggestions will help us to improve the study program. The questionnaire is anonymous. To fill out it takes you only a few minutes.

Thank you.

I Evaluation of motivation to participate in the dual Bachelor study program

Q1: Please indicate your level of agreement with the statements listed below.

1=Strongly Disagree; 2= Disagree; 3= Neither agree nor disagree; 4=Agree; 5=Strongly Agree

	Strongly Disagree				**Strongly Agree**
I feel motivated to participate in the program	1	2	3	4	5
I want to acquire new theoretical knowledge	1	2	3	4	5
I want to learn new practical skills	1	2	3	4	5

[13] Please note that all questionnaires will be distributed in the online form.

I am looking forward to my training in a company 1 2 3 4 5

Q2: Please indicate why you have enrolled in dual Bachelor studies. Please indicate three main reasons.

(a) I want to improve my skills,
(b) I want to get a better position in my company,
(c) I want to establish my own business in the future,
(d) I want to attain recognised qualifications,
(e) I want to impress my colleagues/ family,
(f) other (please, specify what motivated you to enrol in dual Bachelor studies)…

Q3: Please indicate what/ who influenced your decision to enrol in dual Bachelor training.

Please indicate a maximum of three answers.

(a) My employer asked me to improve education,
(b) I wanted to learn something new,
(c) My friend encouraged me to take up the studies,
(d) The study programme qualifications are legally required in my job,
(e) I followed the advice of my HR department,
(f) The university has a good reputation,
(g) The Bachelor program is interesting,
(h) other (please specify what/ who motivated you to enroll in dual Bachelor studies).

Q4: Do you have any other comments regarding your motivation to participate in dual Bachelor training?

_____

_____

_____

II Evaluation of the expectations about the dual Bachelor studies for the participant

Q5: Please indicate your level of agreement with the statements listed below.

1=Strongly Disagree; 2= Disagree; 3= Neither agree nor disagree; 4=Agree; 5=Strongly Agree

	Strongly Disagree				**Strongly Agree**

The study objectives meet my expectations	1	2	3	4	5
The content seems well organized and easy to follow	1	2	3	4	5
The topics seem relevant to me	1	2	3	4	5
The teaching/ learning process is flexible	1	2	3	4	5
The studies will improve my theoretical knowledge	1	2	3	4	5
The studies will improve my practical skills	1	2	3	4	5
The study experience will be useful in my work	1	2	3	4	5
The training in the company will be beneficial	1	2	3	4	5
Overall, dual education system will be effective	1	2	3	4	5

Q6: Do you have any comments about your expectations about the dual Bachelor study program you enrolled in?

_____

_____

_____

IV General information

(1) Please indicate your gender

- ☐ Male
- ☐ Female
- ☐ Prefer not to answer

(2) Please indicate your age

- ☐ Younger than 18
- ☐ 18 - 24
- ☐ 25 - 34
- ☐ 35 – 44
- ☐ 45 - 54
- ☐ Prefer not to answer

(3) Please indicate your professional experience

- ☐ no professional experience
- ☐ 0-6 months

- ☐ 6-12 months
- ☐ 1-3 years
- ☐ 3-5 years
- ☐ 5-10 years
- ☐ more than 10 years

(4) Please indicate your educational background

- ☐ no formal education
- ☐ primary school
- ☐ junior high school
- ☐ vocational school
- ☐ high school
- ☐ technical high school
- ☐ college/ university (Bachelor's Degree/ Engineering Degree)
- ☐ college/ university (Master's Degree)

(5) Did you attend any additional courses/ trainings before you enrolled in this course?

- ☐ YES
- ☐ NO

(6) What additional courses/ trainings did you attend before you enrolled in this course?

_____

_____

_____

(7) Did you know anything about the dual system before you heard about the dual Bachelor study program?

- ☐ YES
- ☐ NO

Thank you for your answers!

6. Appendix 2 SURVEY OF PARTICIPANTS B[14]

(MIDWAY EVALUATION QUESTIONNAIRE)

Dear Participant,

The objective of the study is to evaluate your satisfaction related to dual Bachelor studies, realised by Akademia Pomorska w Słupsku (PP6), within the Project "Three-level Centres of

[14] Please note that all questionnaires will be distributed in the online form.

Professional Excellence: Qualification, Entrepreneurship and Innovation in the Green Economy (3LOE)".

Please, take a few minutes and fill this evaluation form. Your comments and suggestions will help us to improve the study program. The questionnaire is anonymous. To fill out it takes you only a few minutes.

Thank you.

I Evaluation of motivation to participate in the dual Bachelor study program

Q1: Please indicate your level of agreement with the statements listed below.

1=Strongly Disagree; 2= Disagree; 3= Neither agree nor disagree; 4=Agree; 5=Strongly Agree

	Strongly Disagree				**Strongly Agree**
I was motivated to participate in the studies	1	2	3	4	5
Participation and interaction were encouraged	1	2	3	4	5
My creativity was encouraged	1	2	3	4	5
My initiative was highly evaluated	1	2	3	4	5

Q2: What did you like the most about participating in the dual Bachelor study program?

_____

_____

_____

II Evaluation of the usefulness of training for the participant

Q3: Please indicate your level of agreement with the statements listed below.

1=Strongly Disagree; 2= Disagree; 3= Neither agree nor disagree; 4=Agree; 5=Strongly Agree

	Strongly Disagree	**Strongly Agree**

The study objectives have met my expectations	1	2	3	4	5
The content has been well organized and easy to follow	1	2	3	4	5
The topics have been relevant to me	1	2	3	4	5
The facilities for the study have been suitable	1	2	3	4	5
The study has improved my theoretical knowledge	1	2	3	4	5
The study has improved my practical skills	1	2	3	4	5
The study experience will be useful in my work	1	2	3	4	5
The training in the company has been beneficial	1	2	3	4	5
Dual education system has been effective	1	2	3	4	5
I will recommend dual BA program to others	1	2	3	4	5

Q4: Do you have any comments regarding the usefulness of dual Bachelor study prorgam? Which part was the most useful? Which part should be improved?

_____

_____

_____

Q5: Please, answer these additional questions.

1=Strongly Disagree; 2= Disagree; 3= Neither agree nor disagree; 4=Agree; 5=Strongly Agree

After the completion of the studies, I think I …

will get a better job	1	2	3	4	5
will earn more money	1	2	3	4	5
will feel more secure in my job	1	2	3	4	5
will get promoted	1	2	3	4	5
will be successful with setting my own business	1	2	3	4	5
will feel more empowered to take new responsivities	1	2	3	4	5
will attain recognized qualifications	1	2	3	4	5
will do my job with greater satisfaction	1	2	3	4	5

other…

Q6: How does participating in a dual Bachelor study program prepare you to become a highly-skilled and highly-valued employee?

_____

_____

_____

III Evaluation of the trainers and the organization of the training

Q7: Please indicate your level of agreement with the statements listed below.

1=Strongly Disagree; 2= Disagree; 3= Neither agree nor disagree; 4=Agree; 5=Strongly Agree

	Strongly Disagree				**Strongly Agree**
The lecturers have been knowledgeable in their area of expertise	1	2	3	4	5
The lecturers have been good communicators	1	2	3	4	5
The feedback received from the trainers (teachers) has been useful	1	2	3	4	5
The content (i.e. tasks, activities) has been well organized and easy to follow	1	2	3	4	5
The topics have been relevant to me	1	2	3	4	5
The duration of training activities has been relevant	1	2	3	4	5
The teaching materials have been presented in an organized manner	1	2	3	4	5
Practical training in companies has been compatible with the theoretical content taught at school	1	2	3	4	5
The materials distributed have been helpful	1	2	3	4	5

The training process has been flexible	1	2	3	4	5
The overall atmosphere of the training has been encouraging	1	2	3	4	5

Q8: Which specific difficulties did you encounter while participating in a dual Bachelor study program? Did the lectures/ trainers try to help you with your difficulties? How?

_____

_____

_____

IV General information

(1) Please indicate your gender

- ☐ Male
- ☐ Female
- ☐ Prefer not to answer

(2) Please indicate your age

- ☐ Younger than 18
- ☐ 18 - 24
- ☐ 25 - 34
- ☐ 35 – 44
- ☐ 45 - 54
- ☐ Prefer not to answer

(3) Please indicate your professional experience

- ☐ no professional experience
- ☐ 0-6 months
- ☐ 6-12 months
- ☐ 1-3 years
- ☐ 3-5 years
- ☐ 5-10 years
- ☐ more than 10 years

Thank you for your answers!

7. Appendix 3 SURVEY OF LECTURERS/ TRAINERS A (INITIAL EVALUATION QUESTIONNAIRE)

Dear Trainer,

The aim of the study is to evaluate the training program/ curriculum, the organisation of the studies as well as your preparedness to teach subjects in dual Bachelor study system, realised by Akademia Pomorska w Słupsku (PP6), within the Project "Three-level Centres of Professional Excellence: Qualification, Entrepreneurship and Innovation in the Green Economy (3LOE)"

Please take a few minutes to complete this evaluation form. The questionnaire is anonymous. The survey will help to improve the content/ organisation of Dual Bachelor Study Program.

Thank you.

I Evaluation of the content of the training and its organisation

Q1: Please circle the appropriate number to indicate your level of satisfaction

1 = very dissatisfied; 2=somewhat dissatisfied; 3= Neither satisfied nor dissatisfied; 4=somewhat satisfied; 5=very satisfied

	Very Dissatisfied				**Very Satisfied**
How do you evaluate the curriculum of the study in general?	1	2	3	4	5
How do you evaluate the activities planned in the program in terms of their fulfilling the objectives outlined in the program/curriculum?	1	2	3	4	5
How do you evaluate the length of the studies?	1	2	3	4	5
How do you evaluate the balance between theoretical and practical classes/activities?	1	2	3	4	5
How do you evaluate the organisation of the studies?	1	2	3	4	5
How do you evaluate the availability of materials for the studies?	1	2	3	4	5
How do you evaluate the degree of flexibility of the studies?	1	2	3	4	5

Q2: What challenges do you envisage as regards the application of the curriculum of the dual Bachelor program *Logistics: Green Supply Chains*? How could these challenges be mitigated?

_____

_____

_____

II Evaluation of the trainers' preparedness to run the courses

Q3: Please indicate your level of agreement with the statements listed below.

1 = very dissatisfied; 2=somewhat dissatisfied; 3= Neither satisfied nor dissatisfied; 4=somewhat satisfied; 5=very satisfied

	Very Dissatisfied				**Very Satisfied**
How do you evaluate your understanding of the objectives of the study program?	1	2	3	4	5
How do you evaluate your pedagogical skills to work with students?	1	2	3	4	5
How do you evaluate your subject-related competence to teach selected subjects/ supervise activities?	1	2	3	4	5
How do you evaluate your motivation to instruct students in the dual Bachelor study?	1	2	3	4	5
How do you evaluate the assistance on the part of your colleagues in relation to the course you teach?	1	2	3	4	5
How do you evaluate the assistance on the part of your school management in relation to the course you teach?	1	2	3	4	5

Q4: What other issues would you like to raise in relation to your preparedness as a lecturer in dual Bachelor study program *Logistics: Green Supply Chain*?

_____

Background information

(1) Please indicate your gender.

- ☐ Male
- ☐ Female
- ☐ Prefer not to answer

(2) Please indicate your age

- ☐ 18 - 24
- ☐ 25 - 34
- ☐ 35 - 44
- ☐ 45 - 54
- ☐ 55 - 64
- ☐ 65 or older
- ☐ Prefer not to answer

(3) Please indicate how long have you worked as a trainer?

- ☐ 6 months to less than 1 year
- ☐ 1 year to less than 3 years
- ☐ 3 years to less than 5 years
- ☐ 5 years to less than 10 years
- ☐ 10 years to less than 15 years
- ☐ 15 years or more
- ☐ Other

(4) What is the highest level of education you have completed?

- ☐ Master´s degree or equivalent qualification
- ☐ Engineering degree
- ☐ PhD
- ☐ Habilitation
- ☐ Full Professorship
- ☐ Other

(5) Did you receive additional training/ support in relation to dual Bachelor study?

- ☐ YES
- ☐ NO

Thank you for your answers!

8. Appendix 4 SURVEY OF TRAINERS B
(MIDWAY EVALUATION QUESTIONNAIRE)

Dear Trainer,

The aim of the study is to evaluate the training program/ curriculum, the organisation of the studies as well as your preparedness to teach subjects in dual Bachelor study system, realised by Akademia Pomorska w Słupsku (PP6), within the Project "Three-level Centres of Professional Excellence: Qualification, Entrepreneurship and Innovation in the Green Economy (3LOE)"

Please take a few minutes to complete this evaluation form. The questionnaire is anonymous. The survey will help to improve the content/ organisation of Dual Bachelor Study Program.

Thank you.

I Evaluation of the content of the training and its organisation

Q1: Please circle the appropriate number to indicate your level of satisfaction

1 = very dissatisfied; 2=somewhat dissatisfied; 3= Neither satisfied nor dissatisfied; 4=somewhat satisfied; 5=very satisfied

	Very Dissatisfied				**Very Satisfied**
How do you evaluate the curriculum of the study?	1	2	3	4	5
How do you evaluate the activities in the program in terms of their fulfilling the objectives outlined in the study curriculum?	1	2	3	4	5
How do you evaluate the length of the studies?	1	2	3	4	5
How do you evaluate the balance between theoretical and practical classes/activities?	1	2	3	4	5
How do you evaluate the organisation of the studies?	1	2	3	4	5
How do you evaluate the availability of materials for the studies?	1	2	3	4	5
How do you evaluate the facilities available for the					

studies?	1	2	3	4	5
How do you evaluate the degree of flexibility of the studies?	1	2	3	4	5

Q2: What challenges did you encounter while realising the dual study program? How did you mitigate those challenges?

_____

_____

_____

II Evaluation of students' participation in the study program.

Q3: Please circle the appropriate number to indicate your level of satisfaction

1 = very dissatisfied; 2=somewhat dissatisfied; 3= Neither satisfied nor dissatisfied; 4=somewhat satisfied; 5=very satisfied

	Very Dissatisfied				**Very Satisfied**
How do you evaluate the students' knowledge at the beginning of the course?	1	2	3	4	5
How do you evaluate the students' knowledge at the end of the course?	1	2	3	4	5
How do you evaluate the progress made by the students in terms of the practical skills acquired?	1	2	3	4	5
How do you evaluate the students' engagement in the studies?	1	2	3	4	5
How do you evaluate cooperation between students?	1	2	3	4	5
How do you evaluate students' work and learning organization?	1	2	3	4	5
How do you evaluate the readiness of students to work in the profession?	1	2	3	4	5

Q4: What methodological and/or organisational changes should be made to improve the study program so that it better answers the needs of students?

_____

_____

_____

III Evaluation of the cooperation between the school and companies /if applicable/.

Q5: Please indicate your level of agreement with the statements listed below.

1=Strongly Disagree; 2= Disagree; 3= Neither agree nor disagree; 4=Agree; 5=Strongly Agree

	Strongly Disagree				**Strongly Agree**
The company has been engaged in the preparation of the program/ curriculum.	1	2	3	4	5
The company has been fully engaged in the realisation of the study program.	1	2	3	4	5
The company followed the program/ curriculum closely.	1	2	3	4	5
Cooperation with the company has been smooth.	1	2	3	4	5

Q6: What improvements could be made in terms of cooperation between the university and the company while realising dual Bachelor study program?

_____

_____

_____

Background information

Please indicate your gender.

- ☐ Male
- ☐ Female
- ☐ Prefer not to answer

Please indicate your age

- ☐ 18 - 24
- ☐ 25 - 34
- ☐ 35 - 44
- ☐ 45 - 54
- ☐ 55 - 64
- ☐ 65 or older
- ☐ Prefer not to answer

Please indicate how long have you worked as a trainer?

- ☐ 6 months to less than 1 year
- ☐ 1 year to less than 3 years
- ☐ 3 years to less than 5 years
- ☐ 5 years to less than 10 years
- ☐ 10 years to less than 15 years
- ☐ 15 years or more
- ☐ Other

What is the highest level of education you have completed?

- ☐ Master´s degree or equivalent qualification
- ☐ Engineering degree
- ☐ PhD
- ☐ Habilitation
- ☐ Full Professorship
- ☐ Other

Thank you for your answers!

10. Appendix 5 INTERVIEW OF COMPANIES
(EVALUATION QUESTIONNAIRE)

Dear Company Representative,

The aim of the interview is to evaluate the dual Bachelor study program - Logistics: Green Supply Chain, realised by Akademia Pomorska w Słupsku (PP6) in cooperation with your company. The studies are realised within the EU-funded Project "Three-level Centres of Professional Excellence: Qualification, Entrepreneurship and Innovation in the Green Economy (3LOE)"

Please take a few minutes to discuss certain matters with the interviewer - a representative of the University. Your answers will help us improve the content/ organisation of our Dual

Bachelor Study Program and better the cooperation between your company and the university.

Thank you.

1. Company name

……

2. Interviewee (name, position in the company)

……

3. How did the cooperation between the company and the university start?

……
……

4. Was the company management acquainted with the dual system? Were they enthusiastic about the offer to jointly conduct a dual Bachelor study program? Why? \Why not?

……
……
……

5. What is the value of a dual study system for your company?

……
……

6. What is the value of a dual study system for a student?

……
……

7. What are the disadvantages of a dual study program?

……
……

8. What problems did you encounter when realising a dual Bachelor study program with Pomeranian University in Słupsk?

……
……

9. What is the wider impact of a dual study (on the society/ economic environment)?

……
……

10. How would you evaluate cooperation with the University?

……
……

11. Other questions:

……
……
……
……
……
……
……

12. Do you have any other comments/ suggestions?

……
……

Thank you.

Implementation Report

This report aims to aggregate all the information and data related to the development and implementation of the Dual Bachelor's Programme in Logistics - Green Supply Chains, as realised by Pomeranian University in Słupsk (Uniwersytet Pomorski w Słupsku) within the framework of the 3LoE project (Work Package 5, Activity 5.1-5.3).

Overview

The 3LoE project aims to promote a variety of educational measures aimed at training future specialists in the green economy. One of the most efficient ways in which this can be achieved at tertiary (university) level is through the implementation of specifically-designed study programmes. However, the manner of implementation in a specific university depends on the needs of the local job market as well as the legal environment in which a given higher education institution (HEI) operates. The latter means that existing curricula, which had been adopted and implemented in HEIs operating in some countries, could not be easily adopted and implemented in other countries.

Upon a thorough analysis of the legal situation in Poland as well as the job market environment in the Pomerania Region, the project team at Pomeranian University in Słupsk decided to develop its own dual Bachelor's study programme: **Logistics - Green Supply Chains**. The dual study system would be the first of its kind implemented at our University. It was also decided that the students would be employees of local companies who wanted to improve their qualifications.

The programme was developed in the first project year (2021), and implemented as of 1 October 2022, with the graduation envisaged by **30 September 2025**. The implemented programme is a **three-year Bachelor's practical study programme (6 semesters).** The programme adopted, namely Logistics - Green Supply Chains constitutes the so-called study path (or 'specialisation'), which means that the official verification and adoption at the university level was subject to university internal Quality Assurance Procedures and did not need to be approved by the Ministry of Higher Education and Science in Poland.

SWOT Analysis

The decision to develop a new dual study programme, rather than implement any of the existing dual study programmes was consequent upon the analysis of the legal situation in Poland and the analysis of risks and opportunities undertaken by the university project group.

Accordingly, a SWOT analysis was drafted and carried out to evaluate the feasibility of the implementation of the programme in question.

Strengths

- Erasmus+ Funding: Provides financial support and credibility for the project and its implementation;
- A public University is a guarantor of quality and implementability,

- Innovative Programme, addressing current trends and answering to current needs of the local job market could be attractive to students;
- Dual degrees provide an additional element of attractiveness for future students seeking diverse skills;
- Graduates with dual degrees have better job prospects.

Weaknesses

- As a comprehensive university, Pomeranian University in Słupsk lacks specialised focus, which might be seen as less competitive;
- Dual degrees have never been taught at the university (no experience: dual degree programs require significant resources and coordination);
- Academic teachers may lack expertise in the topics of the novel programme (need to hire new faculty to realise the programme);
- The administrative complexity is greater as managing a dual degree (where only university employees can have access to university management (digital) systems) can be complex and bureaucratic;
- Initial Low Awareness: The programme may initially suffer from low awareness and enrollment because of the lack of knowledge of what a dual study programme involves. This may also concern companies in Poland because the dual system is not widely known.

Opportunities

Increased demand is observed in certain professions, including in logistics. This in particular concerns the Pomeranian Region.

The University will expand its outreach by cooperating with regional companies and other stakeholders.

The University will become a regional leader in higher vocational education, and will earn recognisability by way of showcasing its cooperation with business partners.

The education will focus on green solutions (as is the case with the entire 3LoE Project), and therefore the programme will greatly align with global sustainability goals, attracting eco-conscious students and providing them with universally recognised (and sought for) skills.

The implementation will involve changes to the existing programme (or development of a new one), allowing for additional changes in the curricula.

The University will earn international recognition.

Threats

- Other universities might launch similar programmes, increasing competition. This in particular concerns dual programmes, which are more readily applicable to technical universities.

- Companies may not be willing to sign cooperation agreements and jointly start dual studies, mainly due to the fact that the current project does not envisage any financial support to be paid to companies for their involvement.
- Students may not be willing to undertake dual studies at Pomeranian University in Słupsk, as in other universities dual degree programmes often involve subsidies for students in the form of scholarships or paid traineeships.
- Rapid technological advancements may require continuous curriculum updates.
- The adoption of an entirely new programme is challenging, mainly due to the bureaucratic hurdles and the time constraints; an average time a programme is verified, evaluated and given permission (or not) at the Ministry of Higher Education is six to eight months.

Legal background and next steps

(1) The legal provisions regarding the implementation of dual study programmes are very general and outlined in Article 62 of the Act - Law on Higher Education of 20 July 2018 (as amended). The Article reads: “The university may conduct dual studies, which are practical profile studies carried out with the participation of an employer. The organisation of the studies is defined by an agreement concluded in writing.” This general provision did not specify a number of details necessary to start such studies, including the scope of contribution of each partner (especially that of the employer) in the entire study programme. This element is extremely important due to the fact that the law requires a precise calculation of the ECTS points (and hence teachers’ and students’ hourly contribution) in the newly developed study programme.

(2) With no specified roadmap specified in legal acts, the University project team therefore turned to the Ministry of Higher Education and Science in 2021 with a request to clarify the requirements. However, the Ministry did not provide any specific solution (or guidance), the main rationale being that any specific solutions need to be agreed on, and stipulated by, the two parties in a written agreement. The University project team therefore relied on the expertise of other partners within the 3LoE consortium, as well as experience of other Polish universities in implementing dual programmes, including the Warmia and Mazury University in Olsztyn (the management of the university also provided assistance in drafting the university-company contracts regarding cooperation in the implementation of dual Bachelor’s study programmes).

(3) Simultaneously, the university project team initiated programme development, the first step being the search for potential business partners willing to implement the dual study programme with Pomeranian University in Słupsk. The Słupsk Chamber of Industry and Trade (SIPH - Słupska Izba Przemysłowo-Handlowa) provided assistance in the process, by addressing direct questions through internal communication channels, but also through organising direct one-to-one meetings.

The University project team prepared a set of PowerPoint Presentations to clarify the idea of cooperation and the specific nature of the dual study programme.

Also other forms of advertising and communication were implemented. This included booklets and shortened leaflets, such as these:

BOOKLET (PRESENTATION)	LEAFLET

	
[LINK]	[LINK]

(4) Finally, two companies decided to cooperate with Pomeranian University in Słupsk in the Development and Implementation of a dual study programme. The two companies were: Markos sp. z o.o. and Mowi Poland S.A. The companies showed a great interest in the studies and were ready to implement flexible working hours for its employees (in particular, Markos sp. z o.o.).

Along with the experts from the university, the representatives of the companies worked together to develop a comprehensive study programme. The basis for the new dual study programme was the existing Bachelor's programme in Logistics. The decision not to develop an independent study programme was dictated by the fact that the development and implementation of the so-called study path (formerly known as "specialisation") would be much easier and quicker, allowing for a highly flexible approach, if need be. Needless to say, the implementation of the study path takes approximately 4-6 months, while an independent study programme requires (in majors where no research evaluation is undertaken) the verification and approval of the Ministry of Higher Education and Science - a process that may take up to 12 months.

The decision to focus on **logistics** as the study major was the consequence of the lack of specialists in the field on the local job market. This was indicated by numerous reports, including a report developed by Invest in Pomerania[15] (2021) bt also included in the Strategy of Pomorskie Voivodeship till 2030 (2022; see page 37, 42, 46, 57, 59, 66, 112, 117-119 of the Strategy Document[16]). The Green Supply Chain study path was chosen to meet the current challenges of the global economy in finding sustainable solutions to the existing issues, including in logistics.

The study programme was successfully developed and verified by the university Quality Assurance Board, and adopted by the Senate of the University (Resolution of the Senate of Pomeranian University in Słupsk, No. R.000.23.22 of 25 May 2022)[17]. The entire study programme of Logistics, including the study part Logistics- Green Supply Chains - is available from this link [LINK][18] The detailed (and translated) elements of the programme constitute an independent document submitted to Hanse Parlament (PP1) as part of project reporting [LINK].

In this document, only the the most important characteristics of the programme (curriculum) will be enumerated, with all the details provided in the above-mentioned document.

Dual Bachelor's Study Programme: Logistics - Green Supply Chains

(a) Name of the study programme: **Logistics - Green Supply Chains** (dual studies).
(b) Length of the programme: six (6) semesters.
(c) Study programme realised as: **a study path**, or in former nomenclature - a **specialisation**, at the Logistics programme. In the study path scheme, the student chooses his 'specialisation' after the third semester. This means that the first three semesters are common to ALL students in all study paths within the Logistics study programme. Semesters four, five, and six implement the actual dual study programme.
(d) The studies are **full-time, first-cycle (Bachelor's) degree programme, realising the practical profile**. The practical profile means that:
    - students have an increased number of traineeship hours (double the number when compared to the academic profile);
    - practical classes are taught predominantly by practitioners and experts in specific areas;
    - it was the only profile that could be included in the drafted programme, since, according to the Act - Law on Higher Education dual study programmes can only be practical (as regards their profile).

[15] https://edukacja.gdynia.pl/poradnik-zawodowca-priorytetowe-branze-w-wojewodztwie-pomorskim/
[16] https://strategia2030.pomorskie.eu/wp-content/uploads/2021/06/Zalacznik-do-uchwaly_SWP_376_XXXI_21_SRWP2030_120421.pdf
[17] http://bip.apsl.edu.pl/uchwala/16021/uchwala-nr-r-000-23-22
[18] http://bip.apsl.edu.pl/attachments/download/16556

(e) Since Pomeranian University in Słupsk is a public institution of higher education and the study programme was implemented as a full-time programme, students do not pay any tuition fee for attending the programme. It applies to the entire cycle, despite the fact that in Year 2 and Year 3 of the studies, the tutoring system (which is costly) was applied.
(f) The entire programme requires the student to obtain **180 ECTS points in total.** The graduates obtain the professional title of a Bachelor (BA).
(g) The enrollment included employees of both companies, Markos sp. z o.o. and MOWI Poland S.A. The decision to enrol employees was taken upon meticulous risk assessment: it was concluded that if a student only chooses a study path after the third semester, it may well be that few (or no) students choose the dual study path, and the project goals could not be realised. Also, a conscious decision of employees to expand their knowledge and skills paralleled with full support of employers (and a promise of a future promotion upon completion of the studies) prompted the University project team to adopt this form of enrollment, leaving open the possibility of future enrollments by non-employed students.
(h) The programme belongs to the scientific field of “Management and Quality Sciences” (89% of the ECTS points, i.e. 161), and the scientific field of “Economics and Finances” (11% of the ECTS points, i.e. 19).
(i) The programme was started on 1 October 2022, and is due to finish on 30 September 2025. This means that Year 3 courses will not be financed from the project, but will be fully financially supported by Pomeranian University in Słupsk. This is particularly important in view of the fact that most classes in Year 2 and Year 3 are programmed to take place in the tutoring mode.

Skills Development

The dual Bachelor’s Degree Programme in Logistics - Green Supply Chains aimed at developing specific skills and knowledge in students. The skills and knowledge in question concern the all-important components sought for in the green economy.

Accordingly, besides the general skills developed within the LOGISTICS major (common to all students), specific skills/ knowledge was developed in particular study paths.

<u>As regards Green Supply Chains they include:</u>

- Knowledge of the essence of eco-innovation in logistics,
- Understanding of the concept of a sustainable supply chain,
- Familiarity with intelligent transportation systems,
- Ability to manage logistics projects,
- Skill in designing eco-logistics processes and systems,
- Competence in creating market and financial strategies in the logistics chain,
- Proficiency in applying lean management in logistics enterprises,
- Capability to create green supply chains in reverse logistics.

The knowledge and skills were acquired and developed both at university and at each company in courses envisaged in the curriculum. The specific learning outcomes are identified in the curriculum (part of the 3LoE report package - task WP5 A5.1.).

The dual component

The number of ECTS points as well as the workload on the part of companies was the subject of negotiations and is an optimal compromise. The companies expressed their concern about the workload that would be put on the company trainers during the realisation of the dual component in the company. This concern was magnified by the fact that no additional financial support was envisaged for the company on account of their involvement in the implementation.

Also, the companies raised the issue of traineeships, which - in their view - constituted already a significant workload on the company.

The adopted compromise concerns both the number of hours, and the manner in which the necessary verification of study results would be conducted. In particular, it was agreed that most subjects taught at a company would be mirrored at a university, with classes at university including the theoretical component, and the classes taught at a company involving the practical component. Each subject taught in a company would be assigned a coordinator at the university to supervise the entire teaching and administrative process.

The share of time a student realises at university premises and in company is as follows:

60% at university premises

40% at a company.

Regarding the teaching hours and the obligatory component of traineeship, the share is the following:

1654 hours - at university,

165 hours - specialised component at a company,

750 hours - traineeship in a company.

General subjects taught to all students majoring in “Logistics”

Fundamentals of Logistics
Supply Chain Management
Transport Economics
Warehouse Management
Logistics Infrastructure
Production Logistics
Procurement Logistics

Commodity Science
Information Systems in Logistics
Distribution Logistics
Modelling of Logistics Processes and Systems
Quality Management in Logistics
Analysis of the TSL Market
Logistics Controlling
Ecology in Logistics

Specialised subjects taught specifically at the "Green Supply Chains" study path within the Logistics programme:

1. Green Supply Chains
2. Internet of Things and Artificial Intelligence in Logistics Processes
3. Mapping and IT Support of Logistics Processes
4. Reverse Logistics and Circular Economy
5. Lean Management in Logistics
6. Risk Management in Logistics Projects
7. Environmental Certification in Logistics
8. Research and Development Projects
9. Supplementary Seminar

These subjects are included in the curriculum and will be conducted in both theoretical and practical settings, in collaboration with academic staff and enterprise professionals.

The dual component starts after the completion of the first three semesters, and is realised in semester 4, 5 and 6, according to the following scheme (classes realised at the company):

Fourth Semester:

- Green Supply Chains (15 hours)
- Internet of Things and Artificial Intelligence in Logistics Processes (15 hours)
- Mapping and IT Support of Logistics Processes (15 hours)

Fifth Semester:

- Reverse Logistics and Circular Economy (15 hours)
- Lean Management in Logistics (15 hours)
- Risk Management in Logistics Projects (15 hours)
- Environmental Certification in Logistics (15 hours)
- Research and Development Projects (15 hours)

Sixth Semester:

- Supplementary Seminar (15 hours)
- Practical classes and projects in enterprises (30 hours)

Total: 165 hours

Flexible Approach and Application of the Tutoring Method

One of the major changes to the originally planned study plan was the introduction of flexible class times. In other words, the classes taught at university were meant to be common to 'regular' full-time students and dual-study path students (3LoE students). It soon turned out to be impossible because the employees often needed to complete their work at companies at various shifts. Accordingly, the University project group decided to introduce an **individualised timetable**, agreed upon by all parties (students and academic teachers). Classes were therefore taught at different times of the day, also extending to weekends. This put an additional load on academic teachers, who were additionally remunerated for the time spent beyond their regular full-time assignment.

The curriculum also envisaged a possibility to apply the **Tutoring Method** as a way to introduce more individualised learning. This proved particularly important in the current situation of the students being employees in respective companies, and not being able to complete classes in respective time-slots. The tutoring method allowed for the students to attend classes at their discretion. This was an even greater degree of flexibility of the university management. This was important due to a significant dropout rate of students in Year 2 compared to Year 1.

The following courses were conducted in the Tutoring mode:

- Economics of transport (10 hours)
- Warehouse management (10 hours)
- Logistics infrastructure (20 hours)
- Logistics of production (20 hours)
- Supply logistics (10 hours)
- Commodity science (10 hours)
- Elective course (1) (10 hours)
- Team management (15 hours)
- Evaluation of economic projects (10 hours)
- Quality management in logistics (20 hours)
- IT systems in logistics (10 hours)
- Negotiations and communication in business (5 hours)
- TSL market analysis (20 hours)
- Distribution logistics (10 hours)
- Controlling in logistics (10 hours)
- Modelling of logistic processes and systems (10 hours)
- Green solutions in logistics (10 hours)
- Monographic lecture (20 hours)
- Elective course (II) (10 hours)
- Green Supply Chains (20 hours)
- IoT and AI in logistic processes (20 hours)

- Reverse logistics and closed-loop logistics (20 hours)
- Lean management in logistics (10 hours)
- Environmental certification in logistics (20 hours)
- Risk management in logistic projects (20 hours)
- R&D projects (20 hours)

Altogether, there were **260 hours** of theoretical classes and **110 hours** of practical classes taught in the tutoring mode (**370 hours in total**).

Implementation timeline

January 2021-May 2022	Development of dual Bachelor's programme: Logistics - Green Supply Chain
March 2021-August 2021	Analysis of the legal requirements/ environment
May 2021-October 2021	Analysis of the risks and opportunities
September 2021- March 2022	Meetings with Company Representatives / Advertising
5 May 2022	Major Press Conference announcing the launch of Dual Bachelor's Degree Studies in "Logistics - Green Supply Chains" https://www.upsl.edu.pl/aktualnosci-serwisu/studia-dualne-w-akademii-pomorskiej-w-slupsku2
25 May 2022	Formal adoption of the programme by the Senate of Pomeranian University in Słupsk http://bip.apsl.edu.pl/uchwala/16021/uchwala-nr-r-000-23-22
May 2022-July 2022	Signing of Agreements between the University and Companies to jointly run Dual Bachelor's Degree Programme in Logistics - Green Supply Chains
August 2022	Development of Evaluation Concept for the Implementation of Dual Bachelor Programme "Logistics - Green Supply Chains"
1 October 2022	Formal launch of the studies (Year 1)
January-February 2023	Initial Evaluation of the programme (Task WP5 A5.3)
1 October 2023	Start of Year 2; Introduction of the Tutoring Method for the students of the Dual Study Path (see above)
26 February 2024	Start of the 4th semester of Green Supply Chains: Start of classes at companies
June 2024	Mid-way Evaluation of the programme (Task WP5 A5.3)
1 October 2024	Start of Year 3
June 2025	Final evaluation (beyond the scope of 3LoE Project)
30 September 2025	Formal End of the Programme.

Quantitative and qualitative evaluation of Dual Bachelor's Programme: Logistics - Green Supply Chains

The University project team prepared a thorough evaluation of the programme. The evaluation concept as well as the evaluation results constitute separate documents, constituting an integral part of reporting within WP5 A5.3 task.

Number of students

As was mentioned above, the students of the dual Bachelor's Study in Logistics - Green Supply Chains were recruited from the employees of two companies: Markos Sp z o.o. and MOWI Poland S.A.

The initial enrollment (as of July 2022) included 27 candidates:

17 candidates from Markos Sp. z o.o.

10 candidates from MOWI Poland S.A.

(Please find the two lists included - Addendum 1 and 2, respectively)

The final enrollment as of 23 September 2022 included 18 candidates:

11 candidates from Markos Sp. z o.o.

7 candidates from MOWI Poland S.A.

(Please find the list of candidates included - Addendum 3)

Throughout the first academic year, a number of students have dropped out, mainly due to the impossibility of combining professional work with their study workload. Also, some students confirmed that the studies directly coincide with their work timetable.

The list of students at the end of the first academic year (as of 21 June 2023) included 10 persons:

8 students from Markos Sp. z o.o.

1 student from MOWI Poland S.A.

1 student from Perla Company (the student transferred from MOWI Poland S.A.)

(Please find the list of students included - Addendum 4)

The list of students towards at the end of the second academic year (as of 23 June 2024) included 8 persons:

7 students from Markos Sp. z o.o.

1 student from MOWI Poland S.A.

(Please find the list of students included - Addendum 5)

Comment:

There was a relatively big **drop-out rate** among students, especially in Year 1 of the programme (**44.5%**) This was due to a considerable study workload and the impossibility to combine their work and study timetables. The university was flexible in this regard, proposing evening and weekend classes, some of which taking place in the online form. Unfortunately, this helped only to a certain degree. Another issue was the lack of full flexibility of companies as regards the time shifts of their student employees. It is assumed that the construction of this specific programme was also a contributing factor, with students starting their actual dual study path only in the fourth semester. However, due to the reasons mentioned above, it was virtually impossible to start a full dual degree programme. As a recommendation, it is advisable that the dual scheme starts from the first semester of a study programme: this, however, requires full flexibility on the part of companies.

In Year II the University introduced the tutoring study mode, which prevented further drop-out among students, which in Year II amounted to **20%**. Accordingly, the stable number of 8 students will start Year III of the programme.

Number of academic staff involved

Besides the administrative and academic staff constituting the core university project team and responsible for all the activities connected with the 3LoE project, there were also university employees undertaking work on the study programme and the actual classes within the Dual Bachelor's Degree Programme: Logistics - Green Supply Chains.

Accordingly, these are the numbers strictly connected with the realisation of the programme:

Year I: 19 academic teachers (teaching respective classes)

- 4 associate professors
- 6 assistant professors
- 2 senior lecturers
- 1 lecturer
- 6 assistant lecturers

Year II: 14 academic teachers (teaching respective classes)

- 2 full professors
- 5 assistant professors
- 1 senior lecturer
- 5 lecturers
- 1 assistant lecturer

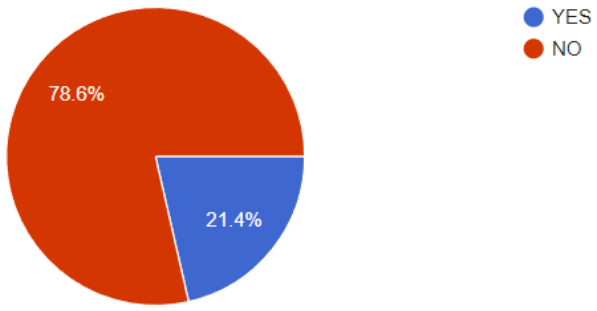
Summary of initial evaluations: STUDENTS

Detailed results of initial and mid-course evaluations are presented in a separate document, constituting an internal part of a report to the task WP5 A5.3. Here, only a summary of results are presented so as to draft an appropriate conclusion regarding the degree of success of the implementation of Dual Bachelor's Degree Programme: Logistics: Green Supply Chains.

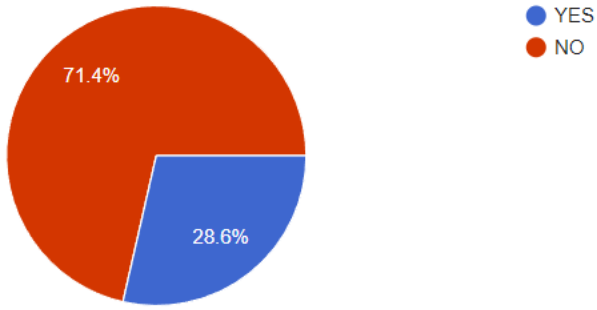
The initial evaluation was administered a few weeks after the start of the studies. Its aim was to measure the degree of satisfaction of students as well as their expectations as regards the dual study path.

According to the initial survey among participants:

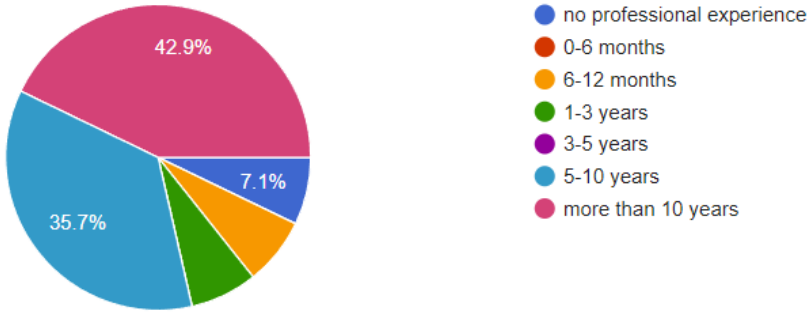
1. The majority of students did not know anything about the dual study programme:



2. Before the start of the Dual Bachelor's Programme: Logistics- Green Supply Chains, they had not participated in any additional trainings or workshops.



3. Most participants had more than 5 years of professional experience.



As regards their **MOTIVATION**:

(A) participants (Likert scale applied):

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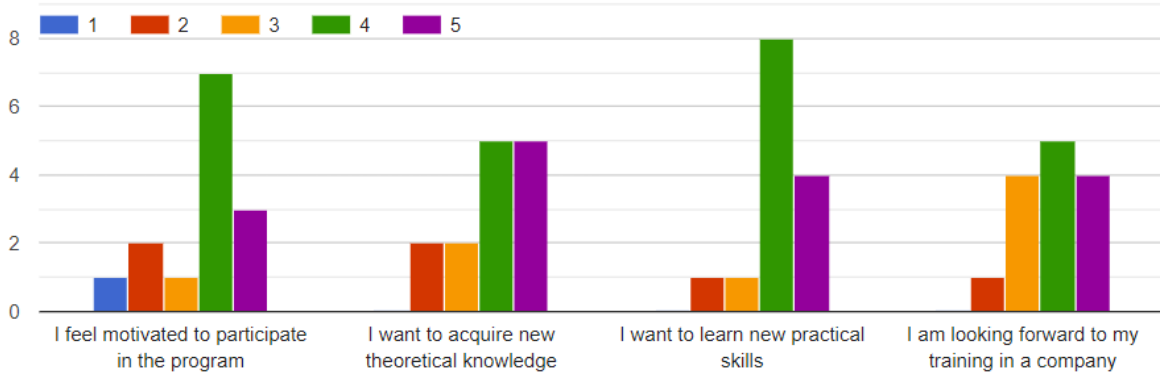
Q1: Please indicate your level of agreement with the statements listed below.

1=Strongly Disagree; 2= Disagree; 3= Neither agree nor disagree; 4=Agree; 5=Strongly Agree



(B) Their motivation to participate in linked to (3 most frequent answers):

- their willingness to get a better position in their companies,
- their willingness to attain recognised qualifications,
- their willingness to improve their skills.

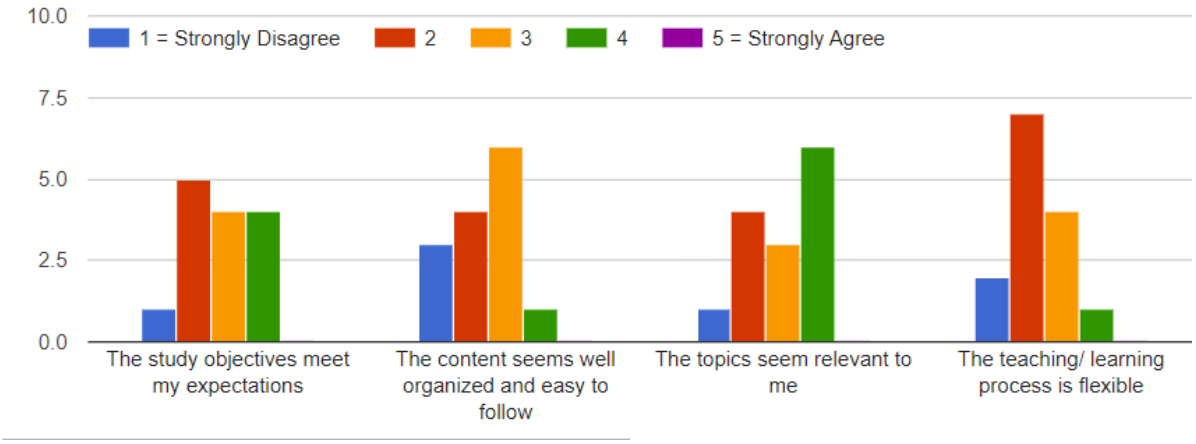
(C) They chose dual study path because (3 most frequent answers):

- they wanted to learn something new,
- the qualifications obtained in the study programme are legally required in their job,
- their friends encouraged them to take up the studies (ex aequo),
- their employer asked them to improve their qualifications (ex aequo).

(D) Regarding the **STUDY PROGRAMME/ CURRICULUM** (Likert scale applied):

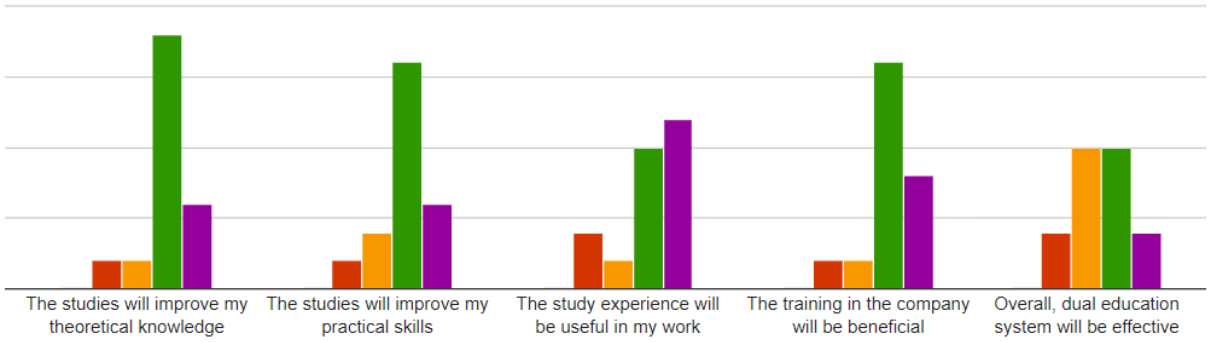
Q5: Please indicate your level of agreement with the statements listed below.

1=Strongly Disagree; 2= Disagree; 3= Neither agree nor disagree; 4=Agree; 5=Strongly Agree



Q5: Please indicate your level of agreement with the statements listed below.

1=Strongly Disagree; 2= Disagree; 3= Neither agree nor disagree; 4=Agree; 5=Strongly Agree



Among the additional (open-ended) comments, the students referred to:

- the fact that the positive factor was that the study programme was full-time, i.e. free for students,
- the fact that the studies will boost their competitiveness on the job market,
- the fact that employers did not facilitate the flexible working hours to allow the students to finish their studies,
- teaching mode: some classes could have been taught in an online mode,
- the programme, which seemed to be very demanding,
- the study programme, which one student thought was not too innovative,
- the study materials, which should have been widely available.

Summary of initial evaluations: TEACHERS

Detailed results of initial and mid-course evaluations are presented in a separate document, constituting an internal part of a report to the task WP5 A5.3. Here, only a summary of results are presented so as to draft an appropriate conclusion regarding the degree of success of the implementation of Dual Bachelor's Degree Programme: Logistics: Green Supply Chains.

The initial evaluation was administered a few weeks after the start of the studies. Its aim was to measure the degree of satisfaction of lecturers linked to the programme taught in the dual study system: Logistics - Green Supply Chains.

Regarding the **CONTENT OF THE TRAINING AND ITS ORGANISATION**, the overall satisfaction level was at the following level (Likert scale applied):

1. Please circle the appropriate number to indicate your level of satisfaction

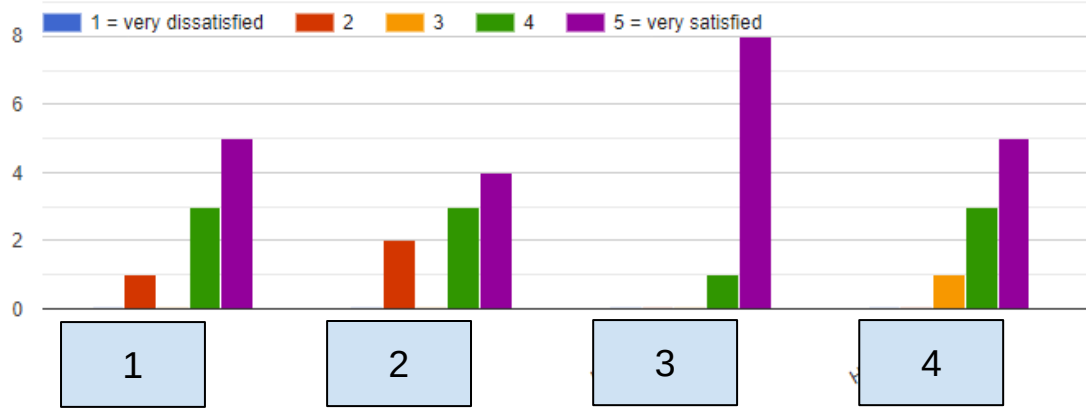
1 = very dissatisfied;

2 = somewhat dissatisfied;

3 = Neither satisfied nor dissatisfied;

4 = somewhat satisfied;

5 = very satisfied



Q1: How do you evaluate the curriculum of the study in general?

Q2: How do you evaluate the activities planned in the program in terms of their fulfilling the objectives outlined in the program/curriculum?

Q3: How do you evaluate the length of the studies?

Q4: How do you evaluate the balance between theoretical and practical classes/activities?

1. Please circle the appropriate number to indicate your level of satisfaction

1 = very dissatisfied;

2 = somewhat dissatisfied;

3 = Neither satisfied nor dissatisfied;

4 = somewhat satisfied;

5 = very satisfied

Q5: How do you evaluate the organisation of the studies?

Q6: How do you evaluate the availability of materials for the studies?

Q7: How do you evaluate the degree of flexibility of the studies?

Overall, the teaching staff was enthusiastic about the implementation of a dual study programme. Several comments were made in the open-ended part of the survey regarding the challenges encountered. The summary of the answers are listed below:

- **Program Structure and Practical Focus**: The dual degree programme should differ from traditional full-time and part-time studies, focusing more on practical subjects to benefit students in their professional work.
- **Course Completion and Structure**: It is suggested that subjects be taught in blocks, where one subject is completed before moving on to the next. This approach would allow students to consolidate their knowledge and make it easier to complete their studies.
- **Concerns About Student Preparedness**: Some students seem unprepared or unaware of the academic demands of the programme. There is a concern that students expect to pass just by attending exams, which should not be the case. The university needs to ensure the programme is economically viable and well-organised to avoid issues similar to those experienced in flexible study programmes.
- **Program Organization and Viability**: There is concern that the dual degree programme could face challenges similar to previous non full-time programmes,

where student numbers dropped significantly. The programme should ensure a higher initial enrollment to maintain viability.

- **Course Delivery and Schedule**: The unpredictable weekly schedule conflicts with students' work shifts, leading to some dropping out. The program should offer a stable schedule throughout the semester.
- **Teaching Hours for Specific Subjects**: There is a recommendation to increase teaching hours, particularly for practical classes in economic geography, as the current hours are insufficient for the depth of discussion and learning needed.

Another element evaluated in the initial survey was the **PREPAREDNESS** of the academic staff to run the courses. The summary of the answers are to be found below:

3. Please indicate your level of agreement with the statements listed below.

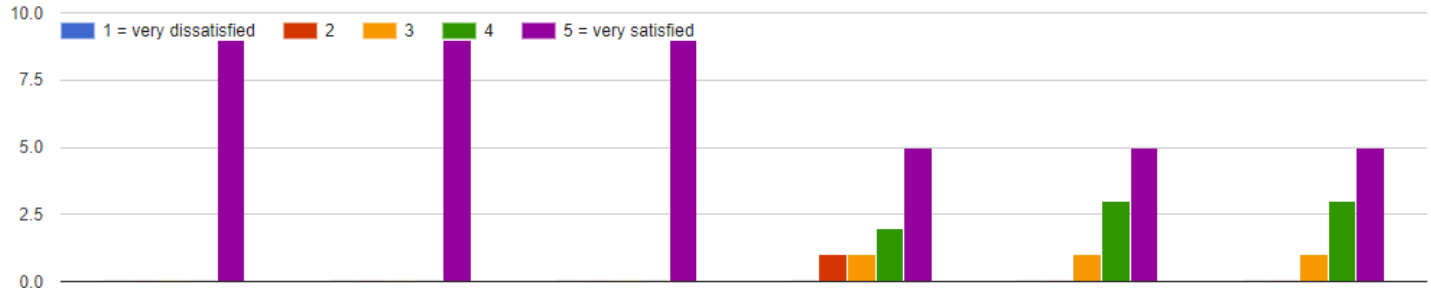
1 = very dissatisfied;

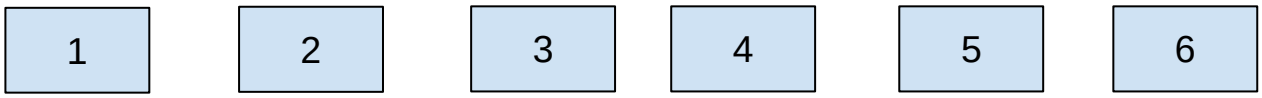
2 = somewhat dissatisfied;

3 = Neither satisfied nor dissatisfied;

4 = somewhat satisfied;

5 = very satisfied





Q1: How do you evaluate your understanding of the objectives of the study program?

Q2: How do you evaluate your pedagogical skills to work with students?

Q3: How do you evaluate your subject-related competence to teach selected subjects/ supervise activities?

Q4: How do you evaluate your motivation to instruct students in the dual Bachelor study?

Q5: How do you evaluate the assistance on the part of your colleagues in relation to the course you teach?

Q6: How do you evaluate the assistance on the part of your school management in relation to the course you teach?

Overall, the teaching staff was fairly well prepared to teach their courses in the dual study programme: Logistics: Green Supply Chains. The only issues raised/ comments made by academic teachers in this regard were:

- lack of proper infrastructure at university, especially as regards IT and other AVT equipment;
- the need to refurbish classrooms,
- the advantageous situation in which *de facto* practitioners teach practical courses.

Summary of mid-course evaluations: STUDENTS

Since the entire study programme ends after the conclusion of the 3LoE project, that is in September 2025, a mid-course evaluation was decided on. Here only a summary of results is presented.

The mid-course evaluation was administered at the turn of the end of the fourth semester of the study programme (June 2024). Its aim was to measure the degree of change in the satisfaction of students as well as their evaluation of the dual study path.

As regards their **MOTIVATION** (Likert scale applied: 1= I strongly disagree; 2= I disagree; 3= I neither agree nor disagree; 4= I agree; 5=I strongly agree), the students:

Copy

1. Proszę wskazać swój poziom zgody z poniższymi stwierdzeniami, gdzie:

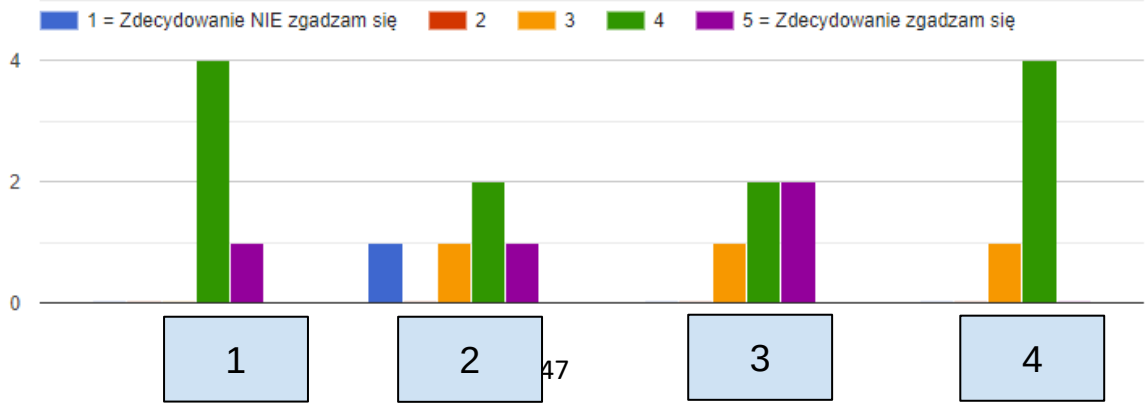
1 = Zdecydowanie nie zgadzam się;

2 = Nie zgadzam się;

3 = Ani się zgadzam, ani nie zgadzam;

4 = Zgadzam się;

5 = Zdecydowanie zgadzam się



Q1: I was motivated to participate in the studies

Q2: I was encouraged to attend classes

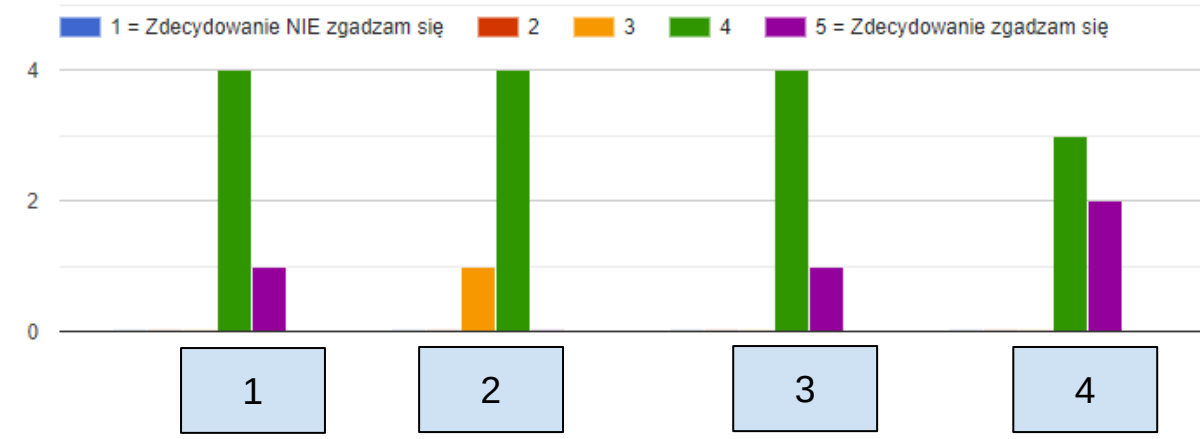
Q3: I was encouraged to be creative during classes

Q4: My participation in classes was highly appreciated

Among the main advantages of the dual Bachelor's studies, the participants indicated the following (in open-ended questions):

- The opportunity to obtain a bachelor's degree
- Gaining new knowledge and experience
- Combining university studies with learning at the employer's site
- Flexibility of lecturers and the university for participants of the dual study programme
- Additional English language classes [**Comment:** these were provided beyond the regular curriculum to allow students to supplement their knowledge and skills to the required B1 level]

Regarding the **CURRICULUM** (Likert scale applied: 1= I strongly disagree; 2= I disagree; 3= I neither agree nor disagree; 4= I agree; 5=I strongly agree)

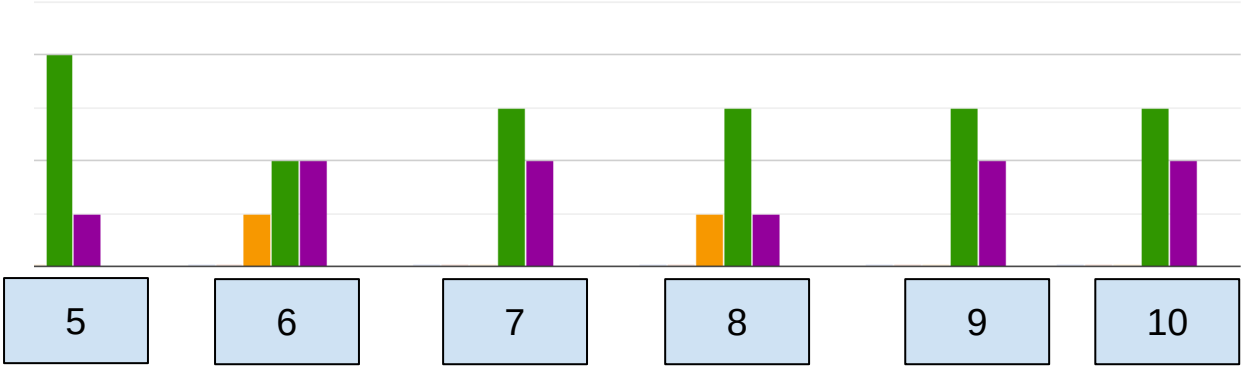


Q1: The goals/assumptions of the studies met my expectations.

Q2: The classes were well-organised and easy to understand.

Q3: The topics covered in the classes were relevant to me.

Q4: The study conditions were appropriate.



Q5: The studies improved my theoretical knowledge.

Q6: The studies improved my practical skills.

Q7: The experience gained during the studies will be useful in my work.

Q8: The specialised classes conducted in the company were useful to me.

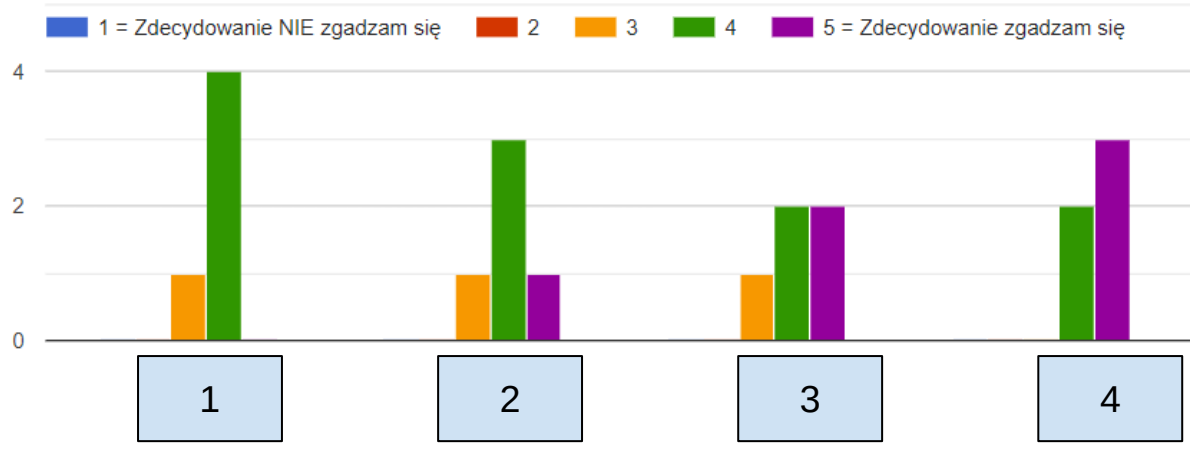
Q9: The dual education system was effective.

Q10: I would recommend the dual study program to others.

Among the main comments regarding the implementation of the dual Bachelor's programme: Logistics - Green Supply Chains, the students raised:

- the issue with the academic workload, which was too strenuous for some students who eventually dropped-out.

Regarding the **EMPLOYMENT PROSPECTS** (Likert scale applied: 1= I strongly disagree; 2= I disagree; 3= I neither agree nor disagree; 4= I agree; 5=I strongly agree), the students:

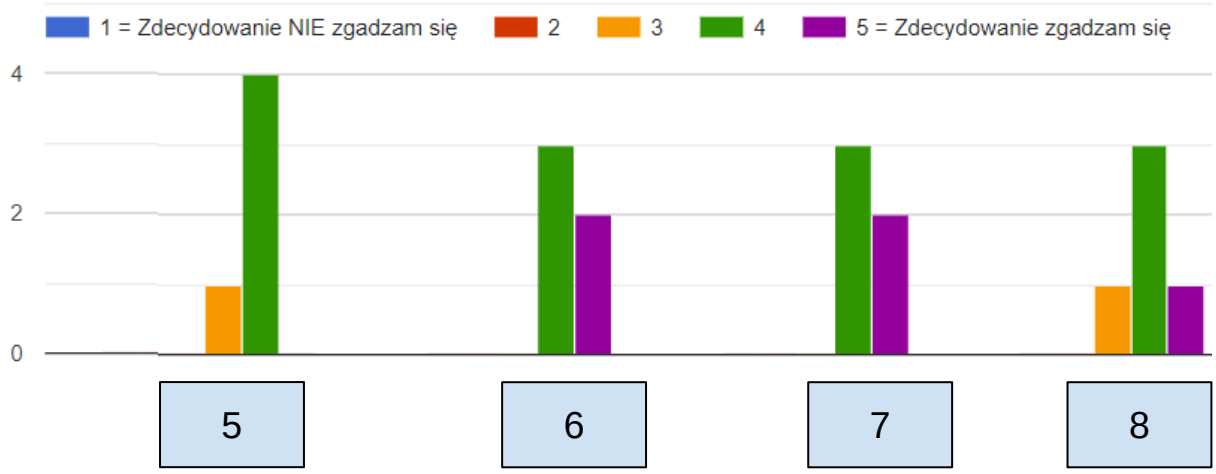


Q1: I will get a better job.

Q2: I will earn more money.

Q3: I will feel more confident in my job.

Q4: I will get a promotion.



Q5: I will succeed in starting my own business.

Q6: I will feel more prepared to take on new responsibilities.

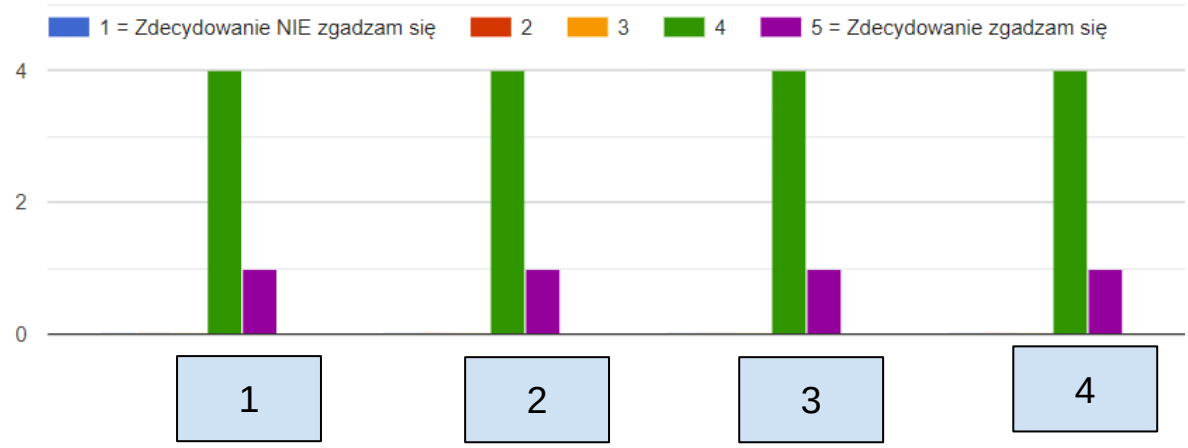
Q7: I will gain recognized qualifications.

Q8: I will perform my job with greater satisfaction.

Among the main comments regarding the role of dual Bachelor's Degree Programme: Logistics - Green Supply Chains in the training of a highly skilled and valuable employee, the students pointed that the the programme:

- successfully combines theoretical knowledge from university with the all-important practical experience in the workplace;
- prepares students for managing and delegating various tasks;
- enhances problem-solving abilities in professional settings;
- offers comprehensive preparation for the job market;
- develops well-qualified and respected professionals.

Regarding the **EFFICACY OF THE STUDIES TO PREPARE HIGHLY SKILLED EMPLOYEES** (Likert scale applied: 1= I strongly disagree; 2= I disagree; 3= I neither agree nor disagree; 4= I a gree; 5=I strongly agree), the students:



Q1: The instructors were competent in their field.

Q2: The instructors conveyed their knowledge clearly.

Q3: The feedback received from the instructors was useful/helpful.

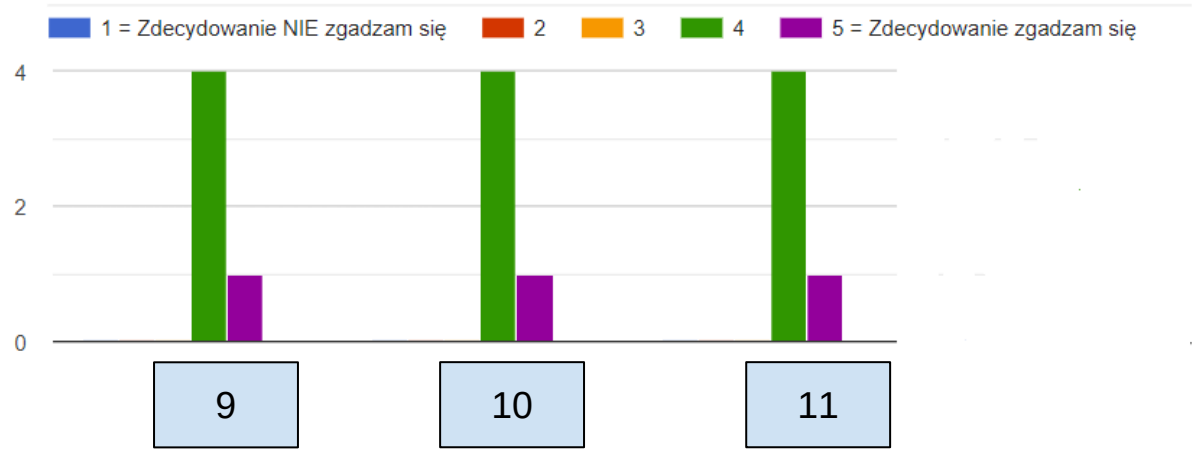
Q4: The content of the classes was well-organised and easy to understand.

Q5: The topics of the classes were relevant/useful to me.

Q6: The duration of the courses was appropriate.

Q7: The educational materials were presented in an appropriate and understandable way.

Q8: The practical training in the company was consistent with the theoretical content presented at the university.



Q9: The received educational materials were helpful.

Q10: The education process was useful and transparent.

Q11: The atmosphere during the studies was supportive.

Among the final comments regarding, in particular, any issues encountered during the programme and the assessment of their solving by the university, the students mentioned the following:

- considerable student workload,
- not convenient timetable, with an additional comment that academic teachers were highly flexible as regards the time of the classes and the time of exams;
- tutoring mode provided a good solution to the problems with timetable problems;
- the administrative management of the course was at the highest level (helping students with any issues encountered).

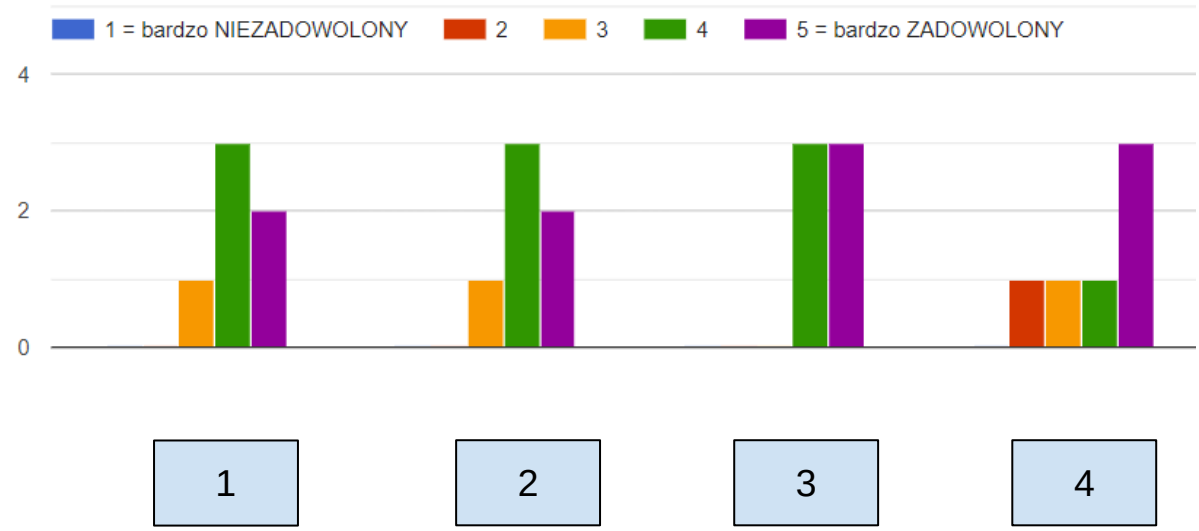
Summary of mid-course evaluations: TEACHERS

Since the entire study programme ends after the conclusion of the 3LoE project, that is in September 2025, a mid-course evaluation was decided upon. Here only a summary of results is presented.

The mid-course evaluation was administered at the turn of the end of the fourth semester of the study programme (June 2024). Its aim was to measure the degree of change in the satisfaction of students as well as their evaluation of the dual study path.

As regards the **COURSE CONTENT AND ORGANISATION OF THE STUDY PROCESS** (Likert scale applied: 1= I was strongly satisfied; 2= I was satisfied; 3= I was neither satisfied nor dissatisfied; 4= I was dissatisfied; 5=I was strongly dissatisfied),

the teachers:

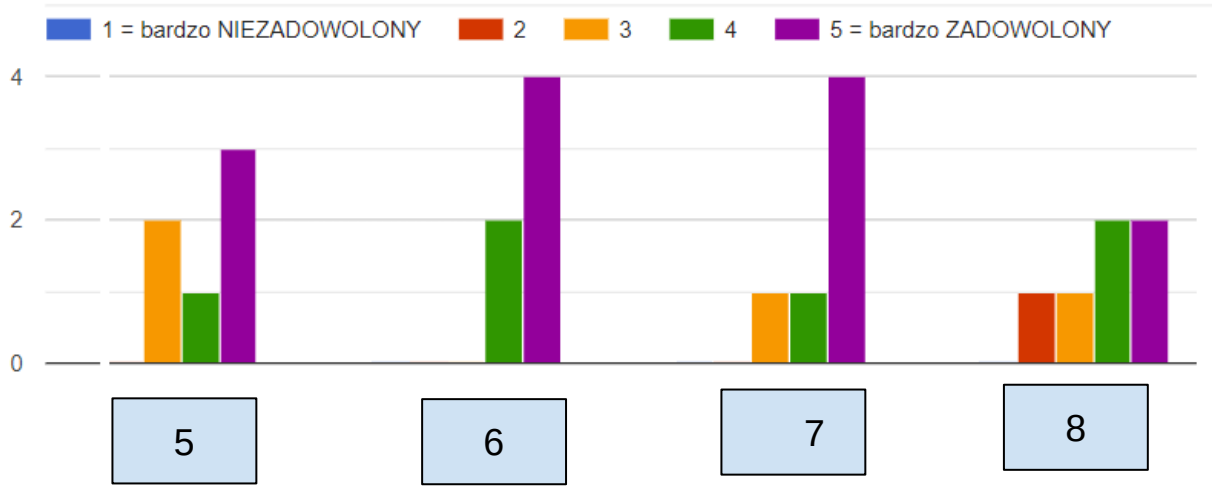


Q1: How do you evaluate the bachelor's dual study programme?

Q2: How do you evaluate the distribution and organisation of the classes included in the dual study program (class schedule) in terms of achieving the goals outlined in the study programme?

Q3: How do you evaluate the duration of the studies?

Q4: How do you evaluate the balance between theoretical and practical classes?



Q5: How do you evaluate the organisation of the studies?

Q6: How do you evaluate the availability of study materials?

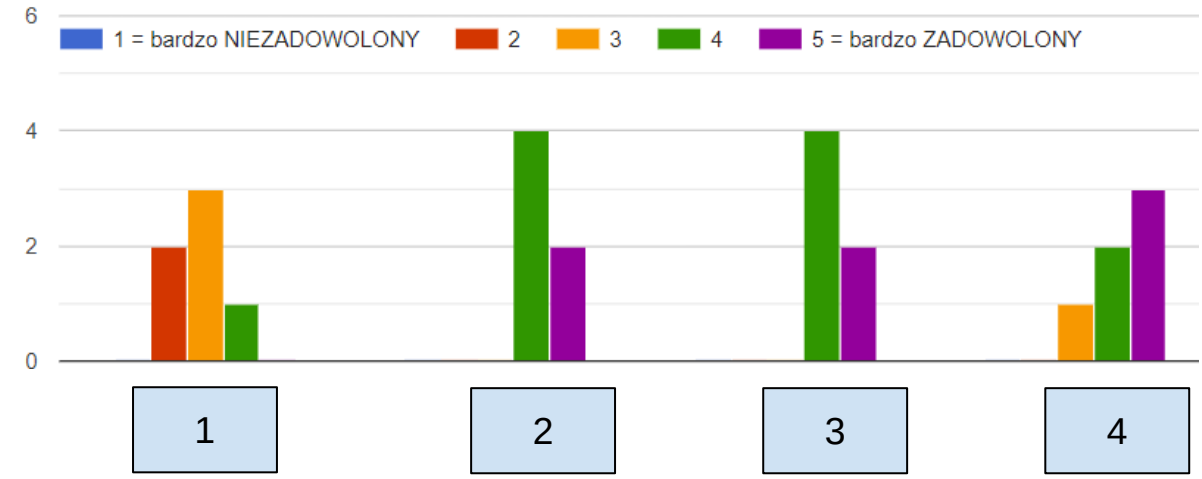
Q7: How do you evaluate the infrastructure available during the studies?

Q8: How do you evaluate the flexibility of the study programme?

Among the comments regarding the study programme and the organisation of the learning/ teaching process, the teachers listed the following:

- the study programme should include more lab classes in cooperation with the companies;
- classes should be taught mostly at weekends to allow the working students to participate in regular university classes;
- the curriculum could be organised in a modular fashion.

As regards the **STUDENT KNOWLEDGE AND ENGAGEMENT** (Likert scale applied: 1= I was strongly satisfied; 2= I was satisfied; 3= I was neither satisfied nor dissatisfied; 4= I was dissatisfied; 5=I was strongly dissatisfied), the teachers:

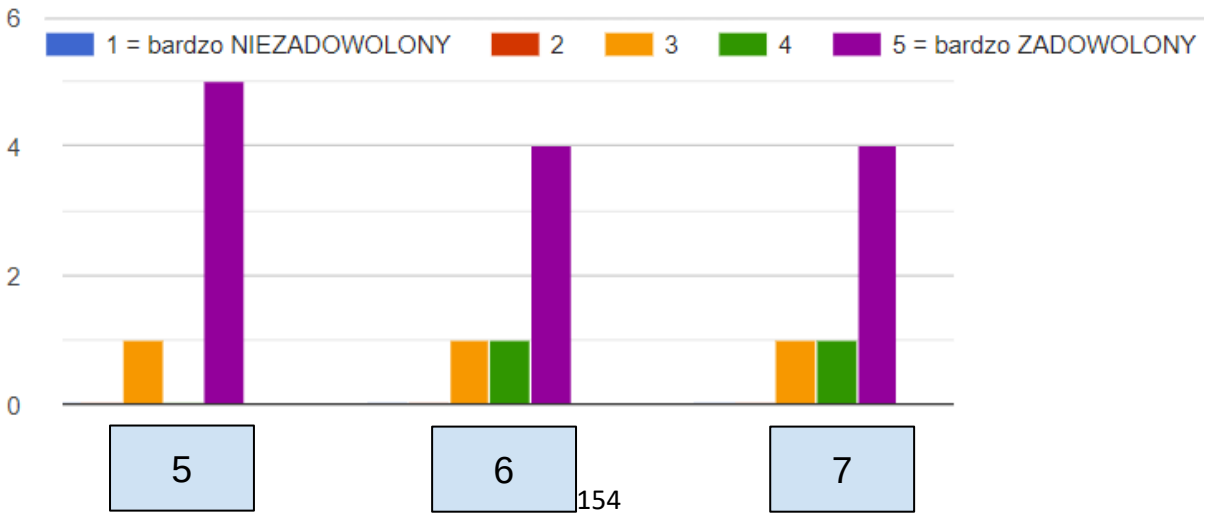


Q1: How do you evaluate the students' knowledge at the beginning of the course?

Q2: How do you evaluate the students' knowledge at the end of the course?

Q3: How do you evaluate the progress made by the students in terms of acquired practical skills?

Q4: How do you evaluate the students' engagement in their studies?



Q5: How do you evaluate the collaboration among students?

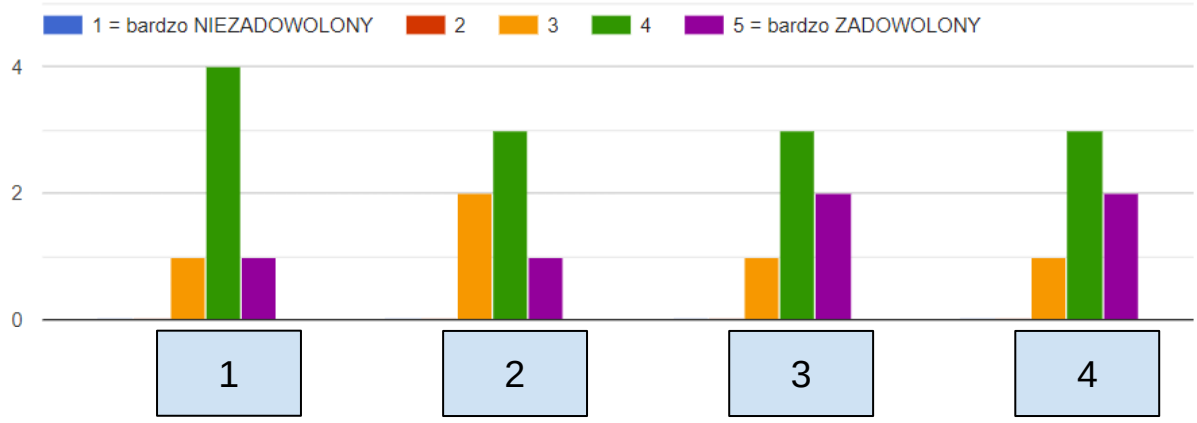
Q6: How do you evaluate the students' organisation and their approach to learning?

Q7: How do you evaluate the students' readiness to work in their profession?

Among the comments regarding student knowledge and engagement in the learning process, the teachers listed the following:

- students had a limited capacity due to their work obligations to fully engage in the learning process;
- students were sometimes absent from classes and they preferred the online teaching/ learning mode;
- some students were reluctant to learn theoretical background (for example, of processes); teachers had to be flexible, giving lots of real-life examples.

As regards the **COOPERATION WITH COMPANIES** (Likert scale applied: 1= I was strongly satisfied; 2= I was satisfied; 3= I was neither satisfied nor dissatisfied; 4= I was dissatisfied; 5=I was strongly dissatisfied), the teachers:



Q1: Companies were involved in the preparation of the study programme.

Q2: Companies were involved in the implementation of the study programme.

Q3: Companies strictly adhered to the study programme.

Q4: Collaboration with companies proceeded without disruptions.

Among the comments regarding cooperation with the companies, the teachers listed the following:

- greater flexibility of companies as regards the working time (i.e. taking into account the study load of students and their study timetable);

    - Companies should provide more guidelines on the outcomes they expect from their employees after completing their studies. This would allow the University to create a programme tailored to even a greater degree to the specific needs;
- the monitoring (evaluation) should concern consecutive phases of the study programme.

Summary of Interviews with Companies

An interview was conducted with a company representative to summarise the cooperation between the University and the Company and to evaluate the implantation of the Dual Bachelor's Degree Programme: Logistics: Green Supply Chains.

- The Company involved in the interview was MARKOS Sp z o.o., represented by Katarzyna Jungling, a contact person at the company.
- The Company underscores **the value of the University reaching out to the Company** with a project that aimed at partnership to implement a dual Bachelor's degree programme; The Management of the Company was introduced to the idea of the study programme and the dual component of the studies.
- The Company emphasises that the drafted **curriculum** and the outline cooperation conditions were **highly evaluated** by the Company Management. The CEOs were in particular enthusiastic about the joint cooperation to implement the dual BA study programme.
- According to the Company, the programme is a valuable element of **upskilling** of the employees. It is also a **financial benefit**, especially for students (the studies are free of charge). The additional advantage is that the Company is involved in the study programme so that **the course contents are better adapted to the needs of the Company**.
- The Company does not see any disadvantages as regards the study programme, however **one of the major obstacles for students was a considerable workload** in the first two semesters of studies.
- According to the Company, the added value of the joint implementation of the dual study programme is the **raising of the awareness of the benefits of lifelong learning**. The development of competencies is possible at any age. Additionally, owing to the implemented study programme, **the competitiveness of the Company and the Employees taking part in the study programme is rising**.
- The Company **evaluates the cooperation between the Company and the University highly**.
- **The Company is eager to continue cooperation with the University in the realisation of similar projects**.

FINAL CONCLUSIONS

1. The dual Bachelor's Degree study programme in LOGISTICS - GREEN SUPPLY CHAINS, as implemented by Pomeranian University in Słupsk within the 3

LoE project proved a success. Owing to the engagement of the university project team, as well as the authorities of the university, lecturers and companies willing to launch the programme with the university the realisation of the programme was possible.

2. The work of the university project team as regards the field of study and specialisation that would/ should be launched in the dual study mode, coupled with a SWOT analysis, led the team to the conclusion that it is impossible to adopt any existing dual study programme (offered within the 3LoE consortium),but rather than a new programme should be drafted. The precise direction (Logistics) and specialisation/ study path (Green Supply Chains) is a direct answer to the needs of the local and regional (Pomeranian Voivodeship) job market and the thematic focus of the project, which aims to answer the most pressing needs of Europe as regards the green transition.
3. The engagement of the companies in the process was a key to success, because these were the employees of the two companies (Markos Sp. z o.o. and MOWI Poland S.A.) who participated in the study programme. With a regular enrollment/ recruitment of students, the programme might now have been successful due to a very low knowledge of, and willingness to participate in, a dual study programme.
4. The implementation of the programme was a huge media success: it was the first dual study programme launched at Pomeranian University in Słupsk, and one of the first ones in Logistics. This put the university among a few HEIs in Poland which successfully implemented the dual system.
5. The implementation of the programme and its media success also contributed to the widening of the knowledge of the dual system in the region.
6. The successful implementation of a dual study programme in Logistics at the Institute of Management, acted as a catalyst for other institutes at the university to draft and introduce their own study programmes. As of August 2024, two other programmes were being drafted.
7. Lack of specific legal regulations regarding dual students, enclosed in one Article (Art. 62) in the Act: Law on Higher Education of 2018 (as amended) made the implementation of the programme difficult for an inexperienced partner (=Pomeranian University in Słupsk). It was thanks to the help of other partner universities in Poland as well as the lead partner of the 3LoE project (Hanse Parlament) that the implementation came to fruition.
8. Owing to the problems mentioned above, the programme was launched with a delay, which means that its end falls after the 3LoE CoVE project concludes. This leaves Pomeranian University in Słupsk with a considerable financial burden for the last year of the study programme.
9. The project budget did not envisage any financial support for either the companies or the students (scholarships), which were available to other Polish partners who took part in similar implementations in the past years (financed from

different programmes, though). This meant that our proposal was not competitive.

10. The drop-out rate of students was considerable, mainly due to the workload envisaged by the study programme and the insufficient flexibility of companies to allow their students to participate in classes. Also, the study timetable could have been more flexible, especially in Year 1.

11. The tutoring method, as introduced in Year 2, proved a big success and the answer to the problems students faced regarding the workload and the timetable. A greater proportion of online classes could also be a solution (however, this is strictly limited by legal regulations). Possibly, a greater engagement on the part of the companies would be an answer. The tutoring method will be the preferred method throughout Year 3 of the course.

12. In the present setting, the dual component was introduced in the 4th semester of the study programme. This means that for the first three semesters all students (including those realising the dual study path) shared the same courses. Possibly, an entirely new programme, envisaging the dual component from the first month of the study programme would have contributed to a greater engagement of the companies in process (i.e. not only from the fourth semester), and would have given the students stronger motivation to attend the courses. Also, this would have allowed the programme to better suit the needs of the job market (and individual companies).

13. The success of the Bachelor's programme can also be viewed from the perspective of student motivation. Among others, students are willing to continue their studies at Master's degree, despite the fact that, at least at the moment, the programme does not include the dual component.

14. Positive Evaluation of Dual BA Programme: The Company highly values the partnership with the University in implementing a dual Bachelor's degree programme, appreciating the tailored curriculum and cooperative conditions. The Management particularly views the programme as beneficial for upskilling employees and financially advantageous for students, as the programme is free of charge.

15. Advantages and Challenges: The programme provides the Company with a customised course structure aligned with its needs, contributing to improved competencies and raising awareness of life-long learning among employees. While no disadvantages were identified, a notable challenge for students was the significant workload during the first two semesters.

16. Commitment to Future Collaboration: The Company regards the partnership with the University positively and is keen on maintaining and expanding cooperation on similar projects, recognising the dual programme's role in enhancing the Company's and employees' competitiveness.

Evaluation Report

Overview

This Evaluation Report aims to summarise the implementation of the dual Bachelor's Degree programme: Logistics - Green Supply chains, launched by Pomeranian University in Słupsk within the 3LoE CoVE project.

Pomeranian University in Słupsk is a state school of higher education with an over 50-year long tradition. It was founded in 1969 as Teacher's College, later turned into Higher Pedagogical School, only to become modern Pomeranian University, offering Bachelor's, Master's and Doctoral degree courses in a variety of fields.

Pomeranian University in Słupsk is a comprehensive (classical) university, offering Bachelor's and Master's degree courses in over 100 study paths (specialisations) covering 23 fields of study at the Bachelor's level, and 17 fields at the Master's level.

Participation in the 3LoE project was seen as highly prestigious by the university management and academic staff. The dual study programme launched as a result of the realisation of 3LoE project activities, was not only innovative (and the first ever at the university), but also as providing new opportunities for both students and staff.

The Aim of the Evaluation

The general aim of the study is to evaluate the effectiveness of the implementation by PP6 of the three-year Bachelor program "Logistics - Green Supply Chains", realised within the Project titled "Three-level Centres of Professional Excellence: Qualification, Entrepreneurship and Innovation in the Green Economy" (3LoE). The conclusions of the evaluation research will contribute to improving specific courses, as well as the quality, and especially the effectiveness of teaching, both at university, and in company. The evaluation will also show the limitations of the training model, and indicate the direction for further activities and curriculum revision (if necessary).

The Addresses of the Evaluation

The participants of the evaluation are:

- students taking part in the dual Bachelor's Degree prorgamme: Logistics - Green Supply chains,
- teachers engaged in the implementation of their courses,
- a company representative to provide feedback on the implementation of the dual programme at the company.

The evaluation is useful for:

- trainers/ teachers – to gain insight into the effectiveness of activities, with a view of improving activities planned throughout the training course;

- university management – to gain insight into the effectiveness of the training, with a view of improving curricula.
- university 3LoE project team - to define the areas of international cooperation that would be beneficial for the implementation of the dual study programme.

The Dual Bachelor's Degree programme: Logistics - Green Supply Chains

The 3LoE project aims to promote a variety of educational measures aimed at training future specialists in the green economy. One of the most efficient ways in which this can be achieved at tertiary (university) level is through the implementation of specifically-designed study programmes. However, the manner of implementation in a specific university depends on the needs of the local job market as well as the legal environment in which a given higher education institution (HEI) operates. The latter means that existing curricula, which had been adopted and implemented in HEIs operating in some countries, could not be easily adopted and implemented in other countries.

Upon a thorough analysis of the legal situation in Poland as well as the job market environment in the Pomerania Region, the project team at Pomeranian University in Słupsk decided to develop its own dual Bachelor's study programme: **Logistics - Green Supply Chains**. The dual study system would be the first of its kind implemented at Pomeranian University in Słupsk. It was also decided that the students would be employees of local companies who wanted to improve their qualifications (rather than students from regular enrollment).

The programme was developed in the first project year (2021), and implemented in 2022 (officially launched on 1 October 2022). The graduation of the students will have taken place by **30 September 2025**. The implemented programme is a **three-year Bachelor's practical study programme (6 semesters).** The programme adopted, namely Logistics - Green Supply Chains constitutes the so-called study path (or 'specialisation'), which means that the official verification and adoption at the university level was subject to university internal Quality Assurance Procedures and did not need to be approved by the Ministry of Higher Education and Science in Poland.

Dual Bachelor's Study Programme: Logistics - Green Supply Chains

- Name of the study programme: **Logistics - Green Supply Chains** (dual studies).
- Length of the programme: six (6) semesters.
- Study programme realised as: **a study path**, or in former nomenclature - a **specialisation**, at the Logistics programme. In the study path scheme, the student chooses his 'specialisation' after the third semester. This means that the first three semesters are common to ALL students in all study paths within the Logistics study programme. Semesters four, five, and six implement the actual dual study programme.
- The studies are **full-time, first-cycle (Bachelor's) degree programme, realising the practical profile**. The practical profile means that:

  - students have an increased number of traineeship hours (double the number when compared to the academic profile);
  - practical classes are taught predominantly by practitioners and experts in specific areas;
  - it was the only profile that could be included in the drafted programme, since, according to the Act - Law on Higher Education dual study programmes can only be practical (as regards their profile).
- Since Pomeranian University in Słupsk is a public institution of higher education and the study programme was implemented as a full-time programme, students do not pay any tuition fee for attending the programme. It applies to the entire cycle, despite the fact that in Year 2 and Year 3 of the studies, the tutoring system (which is costly) was applied.
- The entire programme requires the student to obtain **180 ECTS points in total.** The graduates obtain the professional title of a Bachelor (BA).
- The enrollment included employees of both companies, Markos sp. z o.o. and MOWI Poland S.A. The decision to enrol employees was taken upon meticulous risk assessment: it was concluded that if a student only chooses a study path after the third semester, it may well be that few (or no) students choose the dual study path, and the project goals could not be realised. Also, a conscious decision of employees to expand their knowledge and skills paralleled with full support of employers (and a promise of a future promotion upon completion of the studies) prompted the University project team to adopt this form of enrollment, leaving open the possibility of future enrollments by non-employed students.
- The programme belongs to the scientific field of “Management and Quality Sciences” (89% of the ECTS points, i.e. 161), and the scientific field of “Economics and Finances” (11% of the ECTS points, i.e. 19).
- The programme was started on 1 October 2022 and is due to finish on 30 September 2025. This means that Year 3 courses will not be financed from the project but will be fully financially supported by Pomeranian University in Słupsk. This is particularly important in view of the fact that most classes in Year 2 and Year 3 are programmed to take place in the tutoring mode.
- Training/program participants
- Training/program activities (general overview)

Skills Development (study programme goals)

A graduate of the first-cycle studies in "Logistics" is characterised by:

1. Knowledge of the theoretical, interdisciplinary foundations of modern logistics management in the phases of supply, production, and distribution; cost, finance, and capital management in the TSL sector; methods, tools, and techniques of logistics management; socio-cultural and mathematical-statistical foundations of business; social, legal, and economic conditions of logistics processes both in the domestic and international market, as well as specialised knowledge in the field of study chosen during the course of studies.

2. The ability to critically analyse, interpret, and evaluate facts and expert opinions regarding logistics management; conduct logistics documentation, create

control procedures, perform process analysis, and resolve arising issues; practically apply the knowledge acquired during studies in work within the business sector; forecast and conduct business simulations, use international, EU, and national law standards in transport and logistics activities; lead a team, self-present, conduct business negotiations; prepare written works and oral presentations in Polish and a chosen foreign language, following scientific rules, covering the broadly understood issues of logistics management; collaborate in teams formed to solve problems related to various aspects of logistics management.

3. Social competencies in the area of lifelong self-education, as well as organising the learning process from others using various sources and tools, including ICT technologies; behaving professionally and ethically; developing the achievements of the profession and undertaking actions to promote best practices; critically receiving content and thinking and acting in an entrepreneurial and innovative manner.

The dual Bachelor's Degree Programme in Logistics - Green Supply Chains aimed at developing specific skills and knowledge in students. The skills and knowledge in question concern the all-important components sought for in the green economy.

Accordingly, besides the general skills developed within the LOGISTICS major (common to all students), specific skills/ knowledge were developed in particular study paths.

As regards Green Supply Chains they include:

- Knowledge of the essence of eco-innovation in logistics,
- Understanding of the concept of a sustainable supply chain,
- Familiarity with intelligent transportation systems,
- Ability to manage logistics projects,
- Skill in designing eco-logistics processes and systems,
- Competence in creating market and financial strategies in the logistics chain,
- Proficiency in applying lean management in logistics enterprises,
- Capability to create green supply chains in reverse logistics.

The knowledge and skills were acquired and developed both at university and at each company in courses envisaged in the curriculum. The specific learning outcomes are identified in the curriculum (part of the 3LoE report package - task WP5 A5.1.).

Learning outcomes

Learning outcomes in the field of Logistics with a focus on Green Supply Chains are primarily directed at the socio-economic, institutional-structural, and subject-functional aspects of management in the broadly understood TSL sector. They cover issues that influence the making of rational decisions and the efficient functioning of logistics organisations, as well as the broadly understood conditions and problems related to green supply chains.

EFFECT NUMBER FOR MAJOR	LEARNING OUTCOMES FOR DUAL PEOPLE FIRST DEGREE STUDIES, PRACTICAL PROFILE, FIELD OF STUDY: LOGISTICS STUDY PATH: GREEN SUPPLY CHAINS
KNOWLEDGE: the graduate knows and understands	
K1_W01	terminology used in transport and logistics, as well as theories explaining the mechanisms of the functioning of the economy and the market
K1_W02	advanced principles of operation of logistics systems and processes and relationships between structures, entities and institutions of the supply chain
K1_W03	basic concepts and principles of industrial property protection, copyright and professional ethics, knows the basic legal provisions applicable to running a business
K1_W04	advanced mechanisms, principles and laws of transport economics and the specificity of the functioning of transport and forwarding processes of various forms of transport in national and international terms
K1_W05	the impact of logistics processes on the natural environment and knows methods of pro-ecological management
K1_W06	the role, importance and standards of quality management in logistics, and knows the use of quality improvement methods and tools in logistics management
K1_W07	basic principles of finance and accounting, socio-economic policy, sociology and economics and their impact on logistics activities
K1_W08	principles of logistic customer service, marketing and logistics and marketing strategies, market analysis and people management
K1_W09	the essence of supply, production and distribution in management processes, the relationships between them and their importance in shaping the efficiency of the enterprise and the supply chain
K1_W10	has knowledge of commodity and material science, including the properties of goods and the role and tasks of packaging and logistic units in logistics processes
K1_W11	general principles of management of modern entities, including logistics management and basic principles of creating and developing various forms of individual entrepreneurship
K1_W12	concepts, formulas and theories in mathematics and statistics; knows quantitative methods and tools for analysing, improving and modelling logistics processes

K1_W13	concepts in the field of warehouse management, the essence of managing and designing logistics infrastructure, as well as the principles of selecting and operating warehouse equipment
K1_W14	organisational and technical-technological aspects of the functioning of transport and logistics processes and systems, and has knowledge of the principles and tools of designing and managing these systems
SKILLS: the graduate can	
K1_U01	based on experience gained in an environment professionally dealing with logistics activities**,** observe, analyse, diagnose and interpret phenomena occurring in logistics and supply chains
K1_U02	has basic research skills enabling the construction of simple research and analyzes in the area of management, transport, logistics and green supply chains; is able to formulate conclusions, develop and present results, and indicate directions for further research
K1_U03	based on experience gained in an environment professionally dealing with logistics activities, express precisely and coherently, both orally and in writing, on selected issues related to supply chain management using various theoretical approaches, drawing on the achievements of logistics, management, economics and other disciplines ; prepares documents and reports in the field of logistics
K1_U04	present your own ideas, doubts and suggestions using specialised language; has developed interpersonal communication skills
K1_U05	based on experience gained in an environment professionally dealing with logistics activities, select and assess the suitability of typical methods, analyses and good practices for implementing tasks and solving problems related to the functioning of logistics processes
K1_U06	formulate and solve complex and unusual problems in the field of transport and logistics and forecast the course and effects of planned activities in conditions of uncertainty and risk
K1_U07	take part in the debate and discuss, presenting and assessing the expressed opinions and positions in the field of logistics management
K1_U08	prepare written presentations using a foreign language, including a specialised logistic one, at level B2 of the Common European Framework of Reference for Languages
K1_U09	prepare oral presentations using a foreign language, including a specialised logistic one, at level B2 of the Common European Framework of Reference for Languages
K1_U10	select and obtain information from professional literature and databases, respecting copyrights, and evaluate, critically analyse and synthesise this information; can interpret legal texts
K1_U11	select and use advanced information and communication techniques and IT systems in the implementation of tasks, assessment of logistic problems and in independent

	planning and implementation of the idea of continuous education into life practice, including the use of various forms, methods and techniques of effective learning and methods and techniques of personal development in mental and physical spheres
K1_U12	plan and organise your own and team work, critically assess its progress and initiate corrective actions
K1_U13	cooperate with other people as part of management and logistics tasks, as well as those of an interdisciplinary nature
K1_U14	plan and implement your own learning independently using various forms of education and continually improve professional skills necessary for your own development
K1_U15	identify and comment on logistics processes, in supply, production and distribution logistics and/or maritime logistics in management processes, in the enterprise
K1_U16	serve min. one software/IT system to support logistics processes, can list and characterise software and operating systems used in supply logistics, production and distribution and/or maritime logistics
SOCIAL COMPETENCES: the graduate is ready to	
K1_K01	continuous professional education and personal development, using various teaching tools in the education process, e.g. tutoring and seeking the opinion of experts in case of difficulties in solving problems on their own; is aware of the level of his knowledge and skills
K1_K02	acting and inspiring others to act for the benefit of local communities and the public interest
K1_K03	behaving in a professional manner and observing professional ethics, notices and formulates moral problems and ethical dilemmas in the field of one's own work and that of others
K1_K04	thinking and acting in an entrepreneurial way, in particular in solving logistics and transport problems
K1_K05	developing the achievements of the profession by taking optimal actions to improve the work of oneself and other people and disseminating good practices
K1_K06	critical evaluation of the received content
K1_K07	taking responsibility for the decisions made

The dual component

The number of ECTS points as well as the workload on the part of companies was the subject of negotiations and is an optimal compromise. The companies expressed their concern about the workload that would be put on the company trainers during the realisation of the dual component in the company. This concern was magnified by the

fact that no additional financial support was envisaged for the company on account of their involvement in the implementation.

Also, the companies raised the issue of traineeships, which - in their view - constituted already a significant workload on the company.

The adopted compromise concerns both the number of hours, and the manner in which the necessary verification of study results would be conducted. In particular, it was agreed that most subjects taught at a company would be mirrored at a university, with classes at university including the theoretical component, and the classes taught at a company involving the practical component. Each subject taught in a company would be assigned a coordinator at the university to supervise the entire teaching and administrative process.

The share of time a student realises at university premises and in company is as follows:

60% at university premises

40% at a company.

Regarding the teaching hours and the obligatory component of traineeship, the share is the following:

1654 hours - at university,

165 hours - specialised component at a company,

750 hours - traineeship in a company.

General subjects taught to all students majoring in "Logistics"

Fundamentals of Logistics
Supply Chain Management
Transport Economics
Warehouse Management
Logistics Infrastructure
Production Logistics
Procurement Logistics
Commodity Science
Information Systems in Logistics
Distribution Logistics
Modelling of Logistics Processes and Systems
Quality Management in Logistics
Analysis of the TSL Market
Logistics Controlling
Ecology in Logistics

Specialised subjects taught specifically at the "Green Supply Chains" study path within the Logistics programme:

1. Green Supply Chains
2. Internet of Things and Artificial Intelligence in Logistics Processes
3. Mapping and IT Support of Logistics Processes
4. Reverse Logistics and Circular Economy
5. Lean Management in Logistics
6. Risk Management in Logistics Projects
7. Environmental Certification in Logistics
8. Research and Development Projects
9. Supplementary Seminar

These subjects are included in the curriculum and will be conducted in both theoretical and practical settings, in collaboration with academic staff and enterprise professionals.

The dual component starts after the completion of the first three semesters, and is realised in semester 4, 5 and 6, according to the following scheme (classes realised at the company):

Fourth Semester:

- Green Supply Chains (15 hours)
- Internet of Things and Artificial Intelligence in Logistics Processes (15 hours)
- Mapping and IT Support of Logistics Processes (15 hours)

Fifth Semester:

- Reverse Logistics and Circular Economy (15 hours)
- Lean Management in Logistics (15 hours)
- Risk Management in Logistics Projects (15 hours)
- Environmental Certification in Logistics (15 hours)
- Research and Development Projects (15 hours)

Sixth Semester:

- Supplementary Seminar (15 hours)
- Practical classes and projects in enterprises (30 hours)

Total: 165 hours

Flexible Approach and Application of the Tutoring Method

One of the major changes to the originally planned study plan was the introduction of flexible class times. In other words, the classes taught at university were meant to be common to ‘regular’ full-time students and dual-study path students (3LoE students). It soon turned out to be impossible because the employees often needed to complete their work at companies at various shifts. Accordingly, the University project group

decided to introduce an **individualised timetable**, agreed upon by all parties (students and academic teachers). Classes were therefore taught at different times of the day, also extending to weekends. This put an additional load on academic teachers, who were additionally remunerated for the time spent beyond their regular full-time assignment.

The curriculum also envisaged a possibility to apply the **Tutoring Method** as a way to introduce more individualised learning. This proved particularly important in the current situation of the students being employees in respective companies, and not being able to complete classes in respective time-slots. The tutoring method allowed for the students to attend classes at their discretion. This was an even greater degree of flexibility of the university management. This was important due to a significant dropout rate of students in Year 2 compared to Year 1.

The following courses were conducted in the Tutoring mode:

- Economics of transport (10 hours)
- Warehouse management (10 hours)
- Logistics infrastructure (20 hours)
- Logistics of production (20 hours)
- Supply logistics (10 hours)
- Commodity science (10 hours)
- Elective course (1) (10 hours)
- Team management (15 hours)
- Evaluation of economic projects (10 hours)
- Quality management in logistics (20 hours)
- IT systems in logistics (10 hours)
- Negotiations and communication in business (5 hours)
- TSL market analysis (20 hours)
- Distribution logistics (10 hours)
- Controlling in logistics (10 hours)
- Modelling of logistic processes and systems (10 hours)
- Green solutions in logistics (10 hours)
- Monographic lecture (20 hours)
- Elective course (II) (10 hours)
- Green Supply Chains (20 hours)
- IoT and AI in logistic processes (20 hours)
- Reverse logistics and closed-loop logistics (20 hours)
- Lean management in logistics (10 hours)
- Environmental certification in logistics (20 hours)
- Risk management in logistic projects (20 hours)
- R&D projects (20 hours)

Altogether, there were **260 hours** of theoretical classes and **110 hours** of practical classes taught in the tutoring mode (**370 hours in total**).

Implementation timeline

January 2021-May 2022	Development of dual Bachelor's programme: Logistics - Green Supply Chain
March 2021-August 2021	Analysis of the legal requirements/ environment
May 2021-October 2021	Analysis of the risks and opportunities
September 2021- March 2022	Meetings with Company Representatives / Advertising
5 May 2022	Major Press Conference announcing the launch of Dual Bachelor's Degree Studies in "Logistics - Green Supply Chains" https://www.upsl.edu.pl/aktualnosci-serwisu/studia-dualne-w-akademii-pomorskiej-w-slupsku2
25 May 2022	Formal adoption of the programme by the Senate of Pomeranian University in Słupsk http://bip.apsl.edu.pl/uchwala/16021/uchwala-nr-r-000-23-22
May 2022-July 2022	Signing of Agreements between the University and Companies to jointly run Dual Bachelor's Degree Programme in Logistics - Green Supply Chains
August 2022	Development of Evaluation Concept for the Implementation of Dual Bachelor Programme "Logistics - Green Supply Chains"
1 October 2022	Formal launch of the studies (Year 1)
January-February 2023	Initial Evaluation of the programme (Task WP5 A5.3)
1 October 2023	Start of Year 2; Introduction of the Tutoring Method for the students of the Dual Study Path (see above)
26 February 2024	Start of the 4th semester of Green Supply Chains: Start of classes at companies
June 2024	Mid-way Evaluation of the programme (Task WP5 A5.3)
1 October 2024	Start of Year 3
June 2025	Final evaluation (beyond the scope of 3LoE Project)
30 September 2025	Formal End of the Programme.

Participants (students) of the dual Bachelor's Degree programme: Logistics - Green Supply Chains

the students of the dual Bachelor's Study in Logistics - Green Supply Chains were recruited from the employees of two companies: Markos Sp z o.o. and MOWI Poland S.A.

The initial enrollment (as of July 2022) included 27 candidates:

17 candidates from Markos Sp. z o.o.

10 candidates from MOWI Poland S.A.

The final enrollment as of 23 September 2022 included 18 candidates:

11 candidates from Markos Sp. z o.o.

7 candidates from MOWI Poland S.A.

Throughout the first academic year, a number of students have dropped out, mainly due to the impossibility of combining professional work with their study workload. Also, some students confirmed that the studies directly coincide with their work timetable.

The list of students at the end of the first academic year (as of 21 June 2023) included 10 persons:

8 students from Markos Sp. z o.o.

1 student from MOWI Poland S.A.

1 student from Perla Company (the student transferred from MOWI Poland S.A.)

(Please find the list of students included - Addendum 4)

The list of students towards at the end of the second academic year (as of 23 June 2024) included 8 persons:

7 students from Markos Sp. z o.o.

1 student from MOWI Poland S.A.

Evaluation timeline and methods

Evaluation of dual Bachelor study program will be realised according to the following agenda:
- initial questionnaire: October/ November 2022
- midway questionnaire: February/ March 2024
- Interview with companies: February/ March 2023
- draft of the final report: 1 May 2024
- final report: 30.06.2024

(I) According to the methodology presented above, four questionnaires were administered:

Two written surveys (questionnaires) of participants (=students):

- ☐ one at the beginning of the studies (initial evaluation – see Appendix 1), and
- ☐ one at midway of the studies (midway evaluation - see Appendix 2)

Participants were asked to fill out questionnaires in the first weeks of the studies, and in the middle of the studies in the academic year of 2023/2024. In the midway evaluation, participants will be able to assess the quality of studies (to date) in its various aspects.

The current evaluation constituted quality control of the study programme and the level of satisfaction of its participants. Satisfaction with the course and program content, courses, and thus the efficiency on the "level of response" is a prerequisite for proper motivation to learn and consequently to high efficiency to the next level.

The initial evaluation questionnaire is divided into two parts:
(1) evaluation of motivation to participate in the studies,
(2) evaluation of the expectations of the participant.

The midway evaluation questionnaire is divided into three parts:
(1) evaluation of the motivation measured half-way through the training,
(2) evaluation of satisfaction with the training content,
(3) evaluation of the teaching staff and the organisation of the studies.

Two written surveys (questionnaires) of teaching staff participating in the training:
- ☐ one at the beginning of the training (initial evaluation – see Appendix 3)
- ☐ one at midway of the training (midway evaluation – see Appendix 4).

All teachers were asked to fill out questionnaires in the first months of the training (initial evaluation), and half-way through the training (midway evaluation).

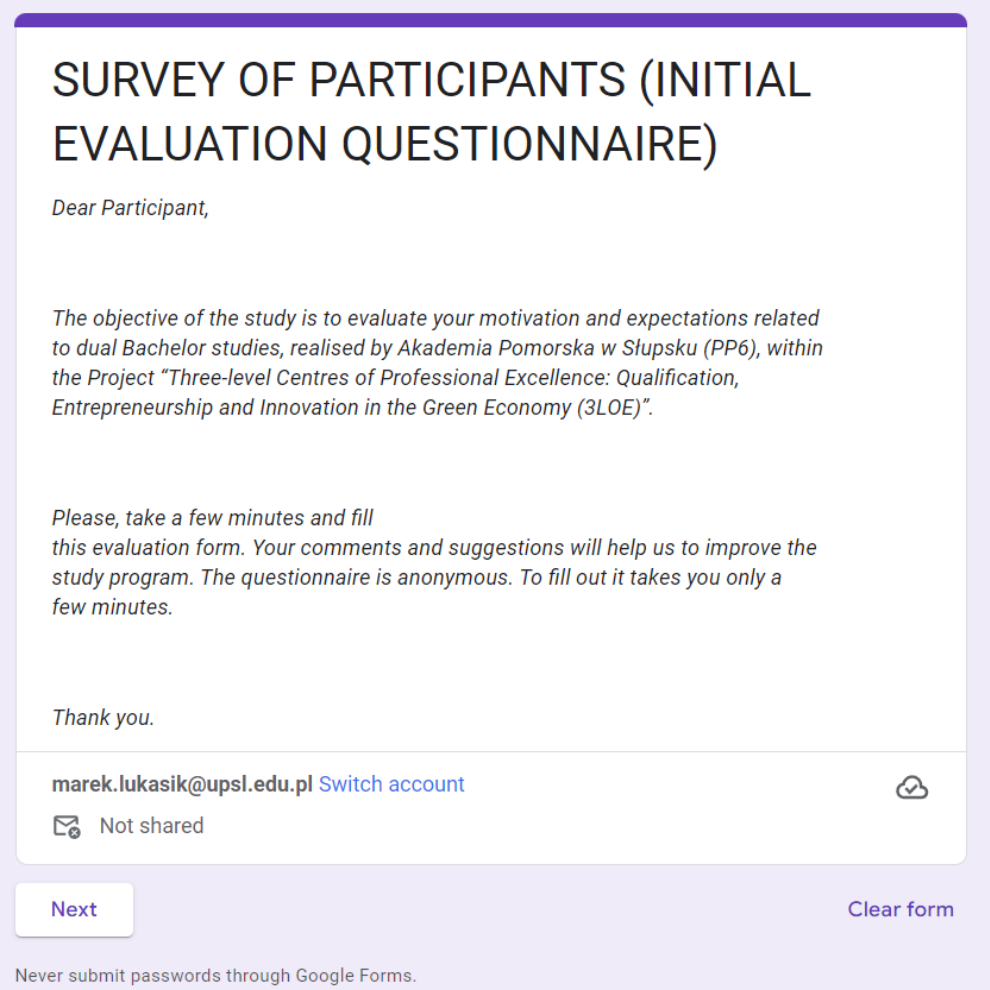
The initial evaluation is divided into two parts:
(1) evaluation of the study program/ curriculum,
(2) evaluation of the preparedness to carry out course activities.

The midway evaluation is divided into three parts:
(1) evaluation of the content of the study program and its organisation,
(2) evaluation of the students participation in the course(s).

(II) The interview was carried out with the representatives of companies to learn about the impact of the dual Bachelor's degree programme on their businesses. Since the major part of training in companies will take place after the conclusion of the project, the interview aimed at evaluating:
- the value of the innovative dual Bachelor degree study in comparison to other types of qualification-raising forms of training;
- the impact of the dual Bachelor programme on the company;
- the value (and quality) of cooperation with the local university;
- the preparedness of companies to continue dual form of education in the future.

The questionnaires were distributed in an online format, with the use of Google Forms and Google Sheets services. All students were provided help (if necessary) while filling out the surveys. In particular, translation into Polish was provided (the entire questionnaires were translated into Polish and sent out to students).

Below are the screenshots of the actual surveys sent out to students and teachers. to save space, only one questionnaire is presented.



SURVEY OF PARTICIPANTS (INITIAL EVALUATION QUESTIONNAIRE)

Dear Participant,

The objective of the study is to evaluate your motivation and expectations related to dual Bachelor studies, realised by Akademia Pomorska w Słupsku (PP6), within the Project "Three-level Centres of Professional Excellence: Qualification, Entrepreneurship and Innovation in the Green Economy (3LOE)".

Please, take a few minutes and fill this evaluation form. Your comments and suggestions will help us to improve the study program. The questionnaire is anonymous. To fill out it takes you only a few minutes.

Thank you.

marek.lukasik@upsl.edu.pl Switch account

Not shared

Next

Clear form

Never submit passwords through Google Forms.

I. Evaluation of motivation to participate in the dual Bachelor study program

Q1: Please indicate your level of agreement with the statements listed below. *

1=Strongly Disagree; 2= Disagree; 3= Neither agree nor disagree; 4=Agree; 5=Strongly Agree

	1	2	3	4	5
I feel motivated to participate in the program	○	○	○	○	○
I want to acquire new theoretical knowledge	○	○	○	○	○
I want to learn new practical skills	○	○	○	○	○
I am looking forward to my training in a company	○	○	○	○	○

Q2: Please indicate why you have enrolled in dual Bachelor studies. Please indicate three **(3)** main reasons. *

- ☐ (a) I want to improve my skills,
- ☐ (b) I want to get a better position in my company,
- ☐ (c) I want to establish my own business in the future,
- ☐ (d) I want to attain recognised qualifications,
- ☐ (e) I want to impress my colleagues/ family,
- ☐ (f) other (please, specify what motivated you to enrol in dual Bachelor studies)...
- ☐ Other: _____

Q3: Please indicate what/ who influenced your decision to enrol in dual Bachelor training. Please indicate a maximum of three answers. *

- [ ] (a) My employer asked me to improve education,
- [ ] (b) I wanted to learn something new,
- [ ] (c) My friend encouraged me to take up the studies,
- [ ] (d) The study programme qualifications are legally required in my job,
- [ ] (e) I followed the advice of my HR department,
- [ ] (f) The university has a good reputation,
- [ ] (g) The Bachelor program is interesting,
- [ ] (h) other (please specify what/ who motivated you to enrol in dual Bachelor studies).
- [ ] Other: _____

Q4: Do you have any other comments regarding your motivation to participate in dual Bachelor training? *

Your answer

Back Next Clear form

II Evaluation of the expectations about the dual Bachelor studies for the participant

Q5: Please indicate your level of agreement with the statements listed below. *

1=Strongly Disagree; 2= Disagree; 3= Neither agree nor disagree; 4=Agree; 5=Strongly Agree

	1 = Strongly Disagree	2	3	4	5 = Strongly Agree
The study objectives meet my expectations	○	○	○	○	○
The content seems well organized and easy to follow	○	○	○	○	○
The topics seem relevant to me	○	○	○	○	○
The teaching/ learning process is flexible	○	○	○	○	○
The studies will improve my theoretical knowledge	○	○	○	○	○
The studies will improve my practical skills	○	○	○	○	○
The study experience will be useful in my work	○	○	○	○	○
The training in the company will be beneficial	○	○	○	○	○
Overall, dual education system will be effective	○	○	○	○	○

Q6: Do you have any comments about your expectations about the dual Bachelor study program you enrolled in? *

Your answer

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III General information

(1) Please indicate your gender *

- Male
- Female
- Prefer not to answer

(2) Please indicate your age *

- Younger than 18
- 18 - 24
- 25 - 34
- 35 - 44
- 45 - 54
- Prefer not to answer

(3) Please indicate your professional experience *

- no professional experience
- 0-6 months
- 6-12 months
- 1-3 years
- 3-5 years
- 5-10 years
- more than 10 years

(4) Please indicate your educational background *

- ○ no formal education
- ○ primary school
- ○ junior high school
- ○ vocational school
- ○ high school
- ○ technical high school
- ○ college/ university (Bachelor's Degree/ Engineering Degree)
- ○ college/ university (Master's Degree)
- ○ Other: _____

(5) Did you attend any additional courses/ trainings before you enrolled in this course? *

- ○ YES
- ○ NO

(6) What additional courses/ trainings did you attend before you enrolled in this course? *

Your answer

(7) Did you know anything about the dual system before you heard about the dual Bachelor study program? *

- ○ YES
- ○ NO

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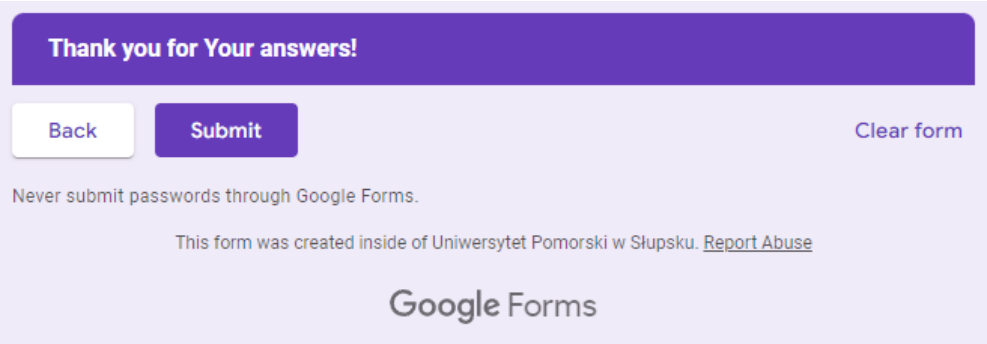


Survey results

Since there are different questionnaires for the initial and midway phase, it was decided that first INITIAL survey results will be presented (the beginning of the 2022/2023 academic year), followed by a MIDWAY survey conducted at the end of the academic year of 2023/2024.

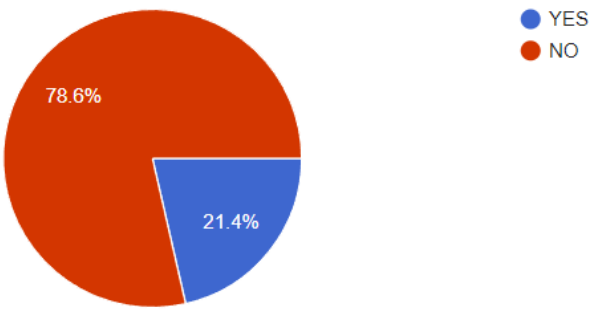
Summary of initial evaluations: STUDENTS

Detailed results of initial and mid-course evaluations are presented in a separate document, constituting an internal part of a report to the task WP5 A5.3. Here, only a summary of results are presented so as to draft an appropriate conclusion regarding the degree of success of the implementation of Dual Bachelor's Degree Programme: Logistics: Green Supply Chains.

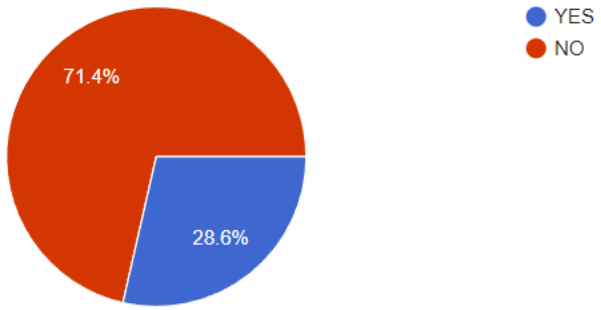
The initial evaluation was administered a few weeks after the start of the studies. Its aim was to measure the degree of satisfaction of students as well as their expectations as regards the dual study path.

<u>According to the initial survey among participants:</u>

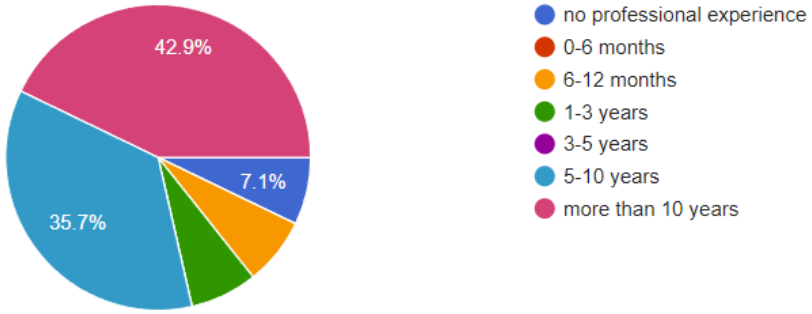
1. The majority of students did not know anything about the dual study programme:



2. Before the start of the Dual Bachelor's Programme: Logistics- Green Supply Chains, they had not participated in any additional trainings or workshops.



3. Most participants had more than 5 years of professional experience.



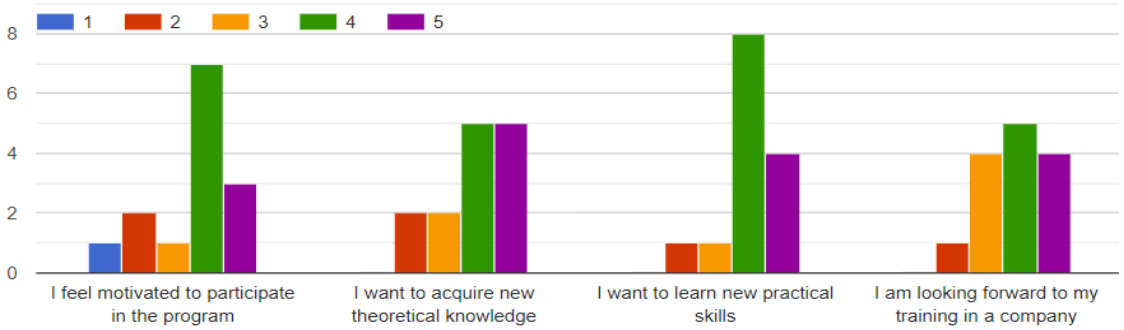
As regards their **MOTIVATION**:

(A) participants (Likert scale applied):

Copy

Q1: Please indicate your level of agreement with the statements listed below.

1=Strongly Disagree; 2= Disagree; 3= Neither agree nor disagree; 4=Agree; 5=Strongly Agree



(B) Their motivation to participate in linked to (3 most frequent answers):

- their willingness to get a better position in their companies,
- their willingness to attain recognised qualifications,
- their willingness to improve their skills.

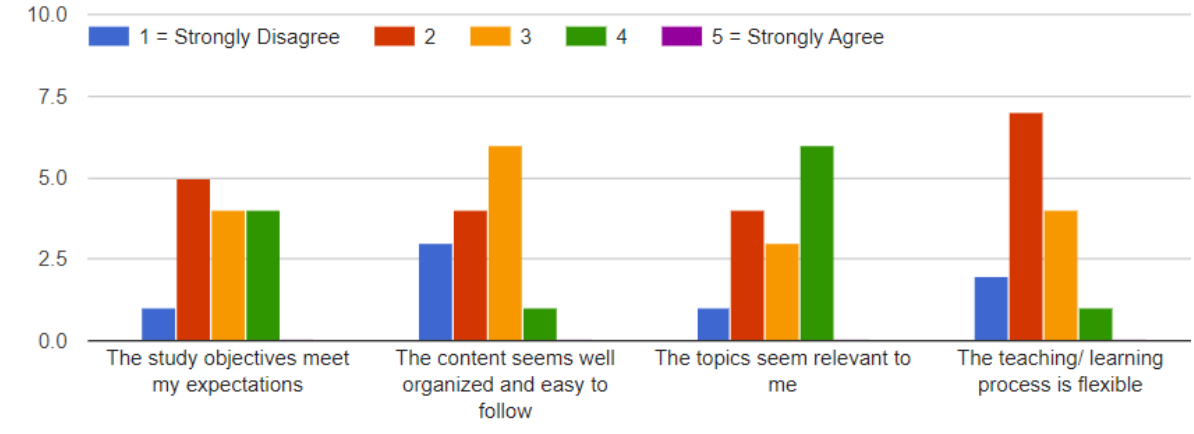
(C) They chose dual study path because (3 most frequent answers):

- they wanted to learn something new,
- the qualifications obtained in the study programme are legally required in their job,
- their friends encouraged them to take up the studies (ex aequo),
- their employer asked them to improve their qualifications (ex aequo).

(D) Regarding the **STUDY PROGRAMME/ CURRICULUM** (Likert scale applied):

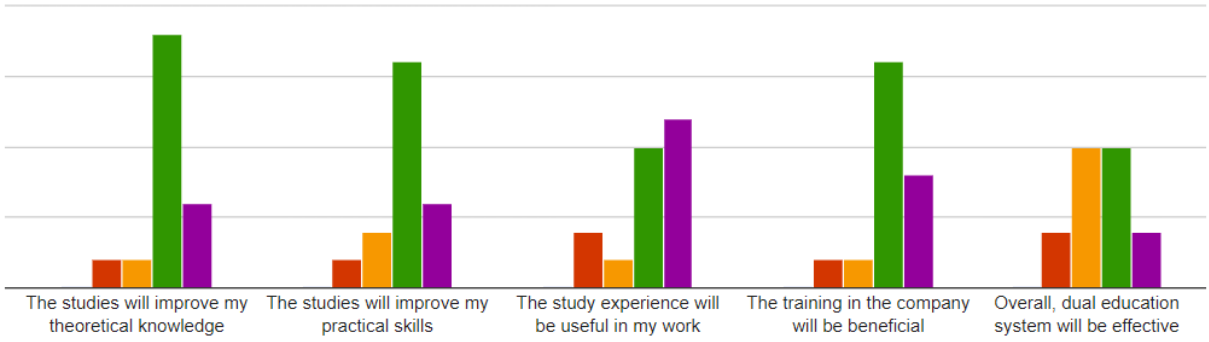
Q5: Please indicate your level of agreement with the statements listed below.

1=Strongly Disagree; 2= Disagree; 3= Neither agree nor disagree; 4=Agree; 5=Strongly Agree



Q5: Please indicate your level of agreement with the statements listed below.

1=Strongly Disagree; 2= Disagree; 3= Neither agree nor disagree; 4=Agree; 5=Strongly Agree



Among the additional (open-ended) comments, the students referred to:

- the fact that the positive factor was that the study programme was full-time, i.e. free for students,
- the fact that the studies will boost their competitiveness on the job market,
- the fact that employers did not facilitate the flexible working hours to allow the students to finish their studies,
- teaching mode: some classes could have been taught in an online mode,
- the programme, which seemed to be very demanding,
- the study programme, which one student thought was not too innovative,
- the study materials, which should have been widely available.

Summary of initial evaluations: TEACHERS

Detailed results of initial and mid-course evaluations are presented in a separate document, constituting an internal part of a report to the task WP5 A5.3. Here, only a summary of results are presented so as to draft an appropriate conclusion regarding the degree of success of the implementation of Dual Bachelor's Degree Programme: Logistics: Green Supply Chains.

The initial evaluation was administered a few weeks after the start of the studies. Its aim was to measure the degree of satisfaction of lecturers linked to the programme taught in the dual study system: Logistics - Green Supply Chains.

Regarding the **CONTENT OF THE TRAINING AND ITS ORGANISATION**, the overall satisfaction level was at the following level (Likert scale applied):

1. Please circle the appropriate number to indicate your level of satisfaction

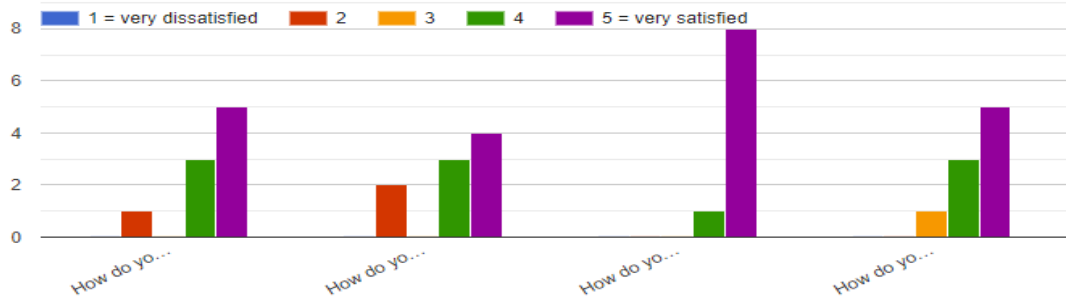
1 = very dissatisfied;

2 = somewhat dissatisfied;

3 = Neither satisfied nor dissatisfied;

4 = somewhat satisfied;

5 = very satisfied



1 2 3 4

Q1: How do you evaluate the curriculum of the study in general?

Q2: How do you evaluate the activities planned in the program in terms of their fulfilling the objectives outlined in the program/curriculum?

Q3: How do you evaluate the length of the studies?

Q4: How do you evaluate the balance between theoretical and practical classes/activities?

1. Please circle the appropriate number to indicate your level of satisfaction

1 = very dissatisfied;

2 = somewhat dissatisfied;

3 = Neither satisfied nor dissatisfied;

4 = somewhat satisfied;

5 = very satisfied

Q5: How do you evaluate the organisation of the studies?

Q6: How do you evaluate the availability of materials for the studies?

Q7: How do you evaluate the degree of flexibility of the studies?

Overall, the teaching staff was enthusiastic about the implementation of a dual study programme. Several comments were made in the open-ended part of the survey regarding the challenges encountered. The summary of the answers are listed below:

- **Program Structure and Practical Focus**: The dual degree programme should differ from traditional full-time and part-time studies, focusing more on practical subjects to benefit students in their professional work.
- **Course Completion and Structure**: It is suggested that subjects be taught in blocks, where one subject is completed before moving on to the next. This approach would allow students to consolidate their knowledge and make it easier to complete their studies.
- **Concerns About Student Preparedness**: Some students seem unprepared or unaware of the academic demands of the programme. There is a concern that students expect to pass just by attending exams, which should not be the case. The university needs to ensure the programme is economically viable and well-organised to avoid issues similar to those experienced in flexible study programmes.
- **Program Organization and Viability**: There is concern that the dual degree programme could face challenges similar to previous non full-time programmes,

where student numbers dropped significantly. The programme should ensure a higher initial enrollment to maintain viability.

- **Course Delivery and Schedule**: The unpredictable weekly schedule conflicts with students' work shifts, leading to some dropping out. The program should offer a stable schedule throughout the semester.
- **Teaching Hours for Specific Subjects**: There is a recommendation to increase teaching hours, particularly for practical classes in economic geography, as the current hours are insufficient for the depth of discussion and learning needed.

Another element evaluated in the initial survey was the **PREPAREDNESS** of the academic staff to run the courses. The summary of the answers are to be found below:

3. Please indicate your level of agreement with the statements listed below.

1 = very dissatisfied;

2 = somewhat dissatisfied;

3 = Neither satisfied nor dissatisfied;

4 = somewhat satisfied;

5 = very satisfied

Q1: How do you evaluate your understanding of the objectives of the study program?

Q2: How do you evaluate your pedagogical skills to work with students?

Q3: How do you evaluate your subject-related competence to teach selected subjects/ supervise activities?

Q4: How do you evaluate your motivation to instruct students in the dual Bachelor study?

Q5: How do you evaluate the assistance on the part of your colleagues in relation to the course you teach?

Q6: How do you evaluate the assistance on the part of your school management in relation to the course you teach?

Overall, the teaching staff was fairly well prepared to teach their courses in the dual study programme: Logistics: Green Supply Chains. The only issues raised/ comments made by academic teachers in this regard were:

- lack of proper infrastructure at university, especially as regards IT and other AVT equipment;
- the need to refurbish classrooms,
- the advantageous situation in which de facto practitioners teach practical courses.

Summary of mid-course evaluations: STUDENTS

Since the entire study programme ends after the conclusion of the 3LoE project, that is in September 2025, a mid-course evaluation was decided on. Here only a summary of results is presented.

The mid-course evaluation was administered at the turn of the end of the fourth semester of the study programme (June 2024). Its aim was to measure the degree of change in the satisfaction of students as well as their evaluation of the dual study path.

As regards their **MOTIVATION** (Likert scale applied: 1= I strongly disagree; 2= I disagree; 3= I neither agree nor disagree; 4= I agree; 5=I strongly agree), the students:

Copy

1. Proszę wskazać swój poziom zgody z poniższymi stwierdzeniami, gdzie:

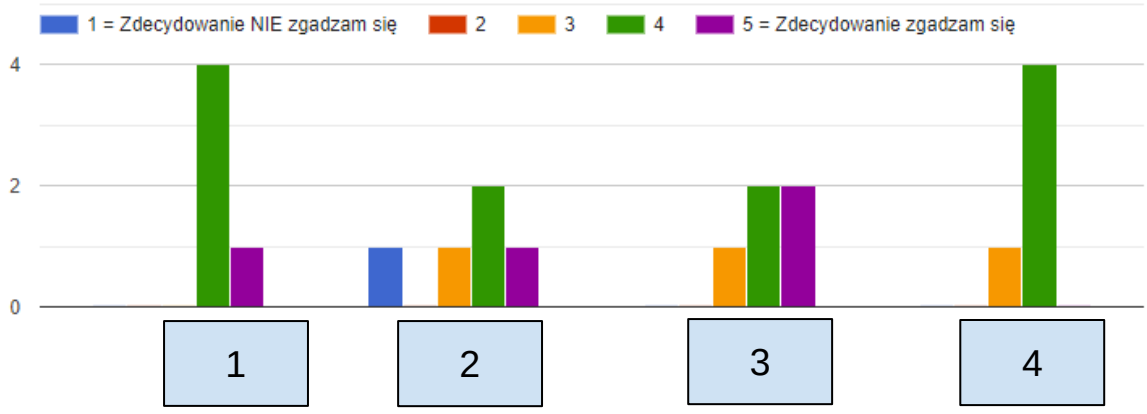
1 = Zdecydowanie nie zgadzam się;

2 = Nie zgadzam się;

3 = Ani się zgadzam, ani nie zgadzam;

4 = Zgadzam się;

5 = Zdecydowanie zgadzam się



Q1: I was motivated to participate in the studies

Q2: I was encouraged to attend classes

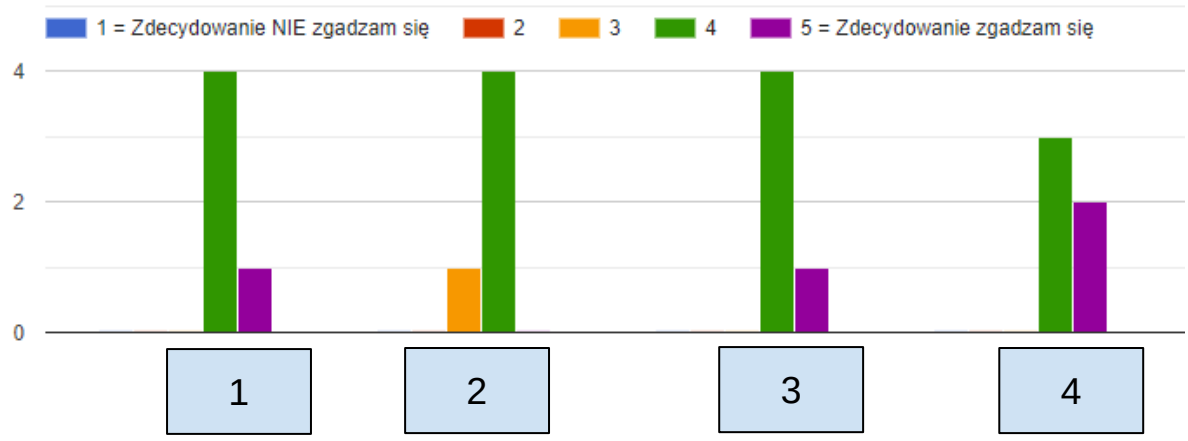
Q3: I was encouraged to be creative during classes

Q4: My participation in classes was highly appreciated

Among the main advantages of the dual Bachelor's studies, the participants indicated the following (in open-ended questions):

- The opportunity to obtain a bachelor's degree
- Gaining new knowledge and experience
- Combining university studies with learning at the employer's site
- Flexibility of lecturers and the university for participants of the dual study programme
- Additional English language classes [**Comment:** these were provided beyond the regular curriculum to allow students to supplement their knowledge and skills to the required B1 level]

Regarding the **CURRICULUM** (Likert scale applied: 1= I strongly disagree; 2= I disagree; 3= I neither agree nor disagree; 4= I agree; 5=I strongly agree)

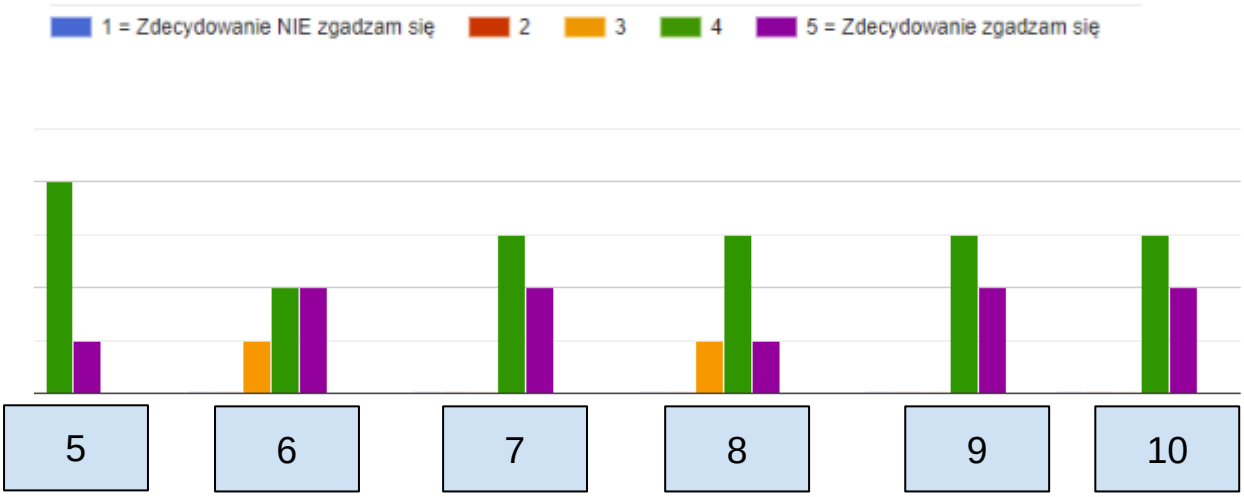


Q1: The goals/assumptions of the studies met my expectations.

Q2: The classes were well-organised and easy to understand.

Q3: The topics covered in the classes were relevant to me.

Q4: The study conditions were appropriate.



Q5: The studies improved my theoretical knowledge.

Q6: The studies improved my practical skills.

Q7: The experience gained during the studies will be useful in my work.

Q8: The specialised classes conducted in the company were useful to me.

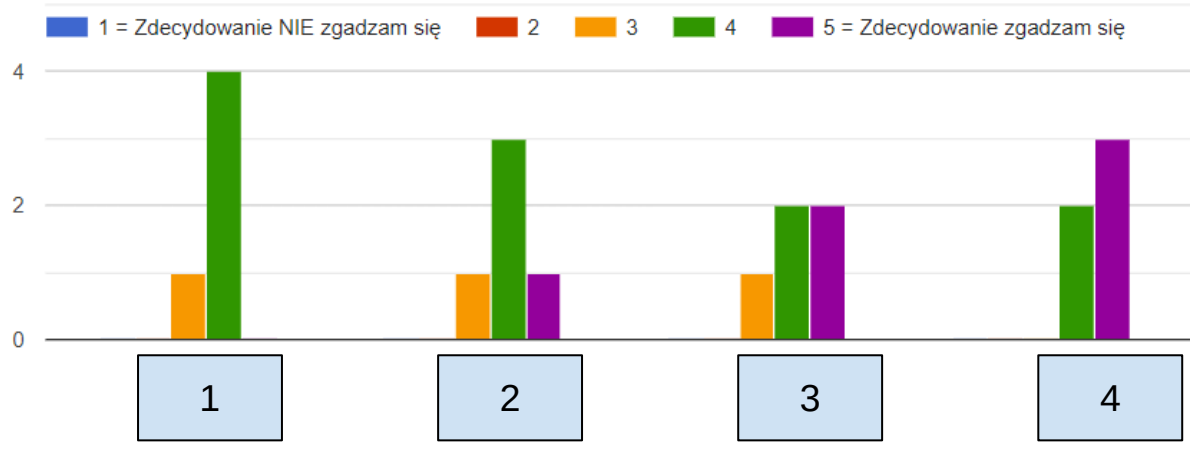
Q9: The dual education system was effective.

Q10: I would recommend the dual study program to others.

Among the main comments regarding the implementation of the dual Bachelor's programme: Logistics - Green Supply Chains, the students raised:

- the issue with the academic workload, which was too strenuous for some students who eventually dropped-out.

Regarding the **EMPLOYMENT PROSPECTS** (Likert scale applied: 1= I strongly disagree; 2= I disagree; 3= I neither agree nor disagree; 4= I agree; 5=I strongly agree), the students:

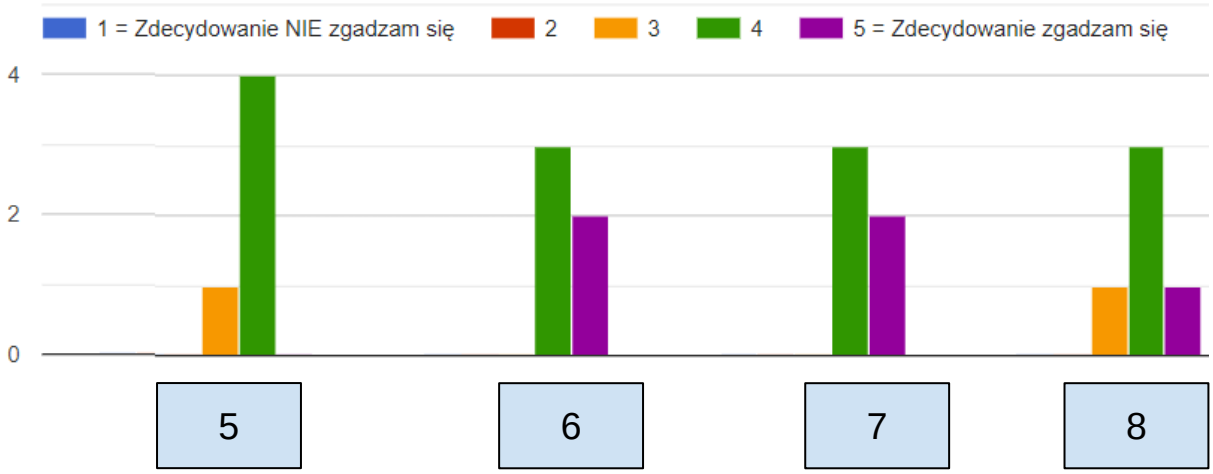


Q1: I will get a better job.

Q2: I will earn more money.

Q3: I will feel more confident in my job.

Q4: I will get a promotion.



Q5: I will succeed in starting my own business.

Q6: I will feel more prepared to take on new responsibilities.

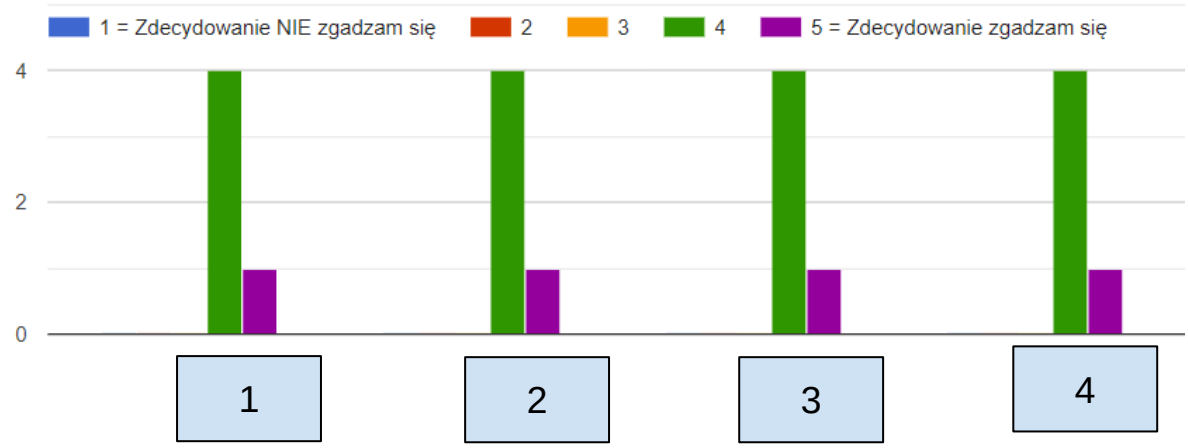
Q7: I will gain recognized qualifications.

Q8: I will perform my job with greater satisfaction.

Among the main comments regarding the role of dual Bachelor's Degree Programme: Logistics - Green Supply Chains in the training of a highly skilled and valuable employee, the students pointed that the the programme:

- successfully combines theoretical knowledge from university with the all-important practical experience in the workplace;
- prepares students for managing and delegating various tasks;
- enhances problem-solving abilities in professional settings;
- offers comprehensive preparation for the job market;
- develops well-qualified and respected professionals.

Regarding the **EFFICACY OF THE STUDIES TO PREPARE HIGHLY SKILLED EMPLOYEES** (Likert scale applied: 1= I strongly disagree; 2= I disagree; 3= I neither agree nor disagree; 4= I agree; 5=I strongly agree), the students:



Q1: The instructors were competent in their field.

Q2: The instructors conveyed their knowledge clearly.

Q3: The feedback received from the instructors was useful/helpful.

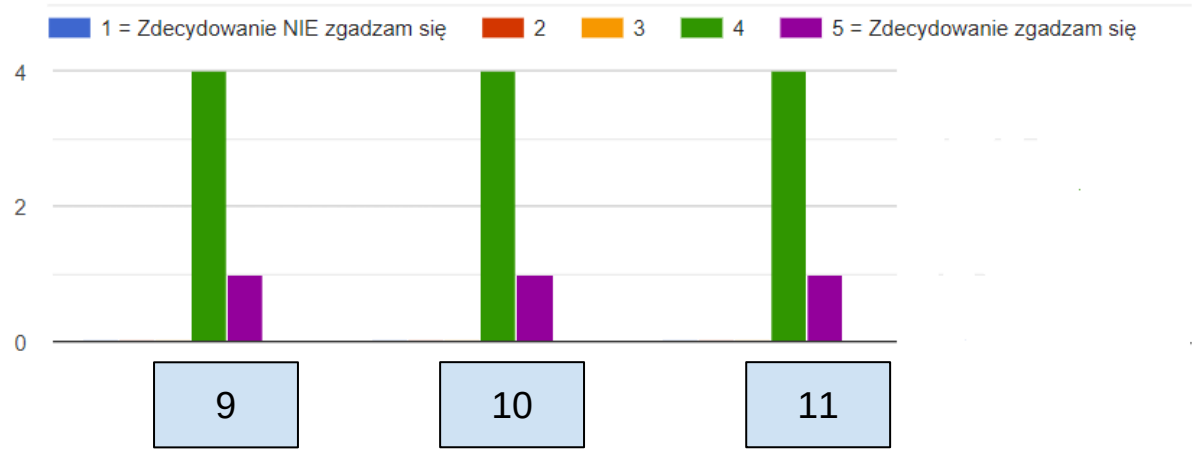
Q4: The content of the classes was well-organised and easy to understand.

Q5: The topics of the classes were relevant/useful to me.

Q6: The duration of the courses was appropriate.

Q7: The educational materials were presented in an appropriate and understandable way.

Q8: The practical training in the company was consistent with the theoretical content presented at the university.



Q9: The received educational materials were helpful.

Q10: The education process was useful and transparent.

Q11: The atmosphere during the studies was supportive.

Among the final comments regarding, in particular, any issues encountered during the programme and the assessment of their solving by the university, the students mentioned the following:

- considerable student workload,
- not convenient timetable, with an additional comment that academic teachers were highly flexible as regards the time of the classes and the time of exams;
- tutoring mode provided a good solution to the problems with timetable problems;
- the administrative management of the course was at the highest level (helping students with any issues encountered).

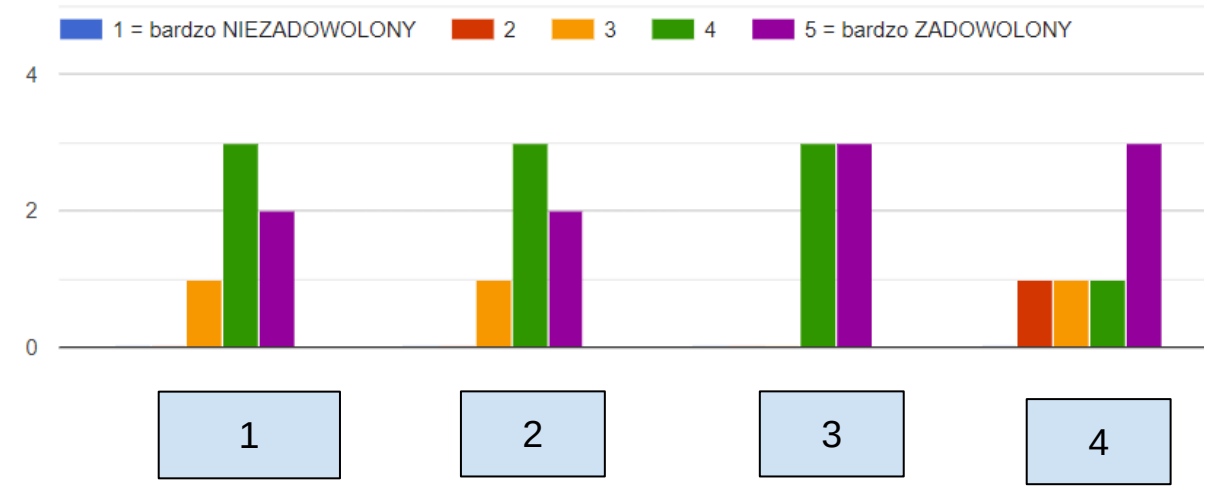
Summary of mid-course evaluations: TEACHERS

Since the entire study programme ends after the conclusion of the 3LoE project, that is in September 2025, a mid-course evaluation was decided upon. Here only a summary of results is presented.

The mid-course evaluation was administered at the turn of the end of the fourth semester of the study programme (June 2024). Its aim was to measure the degree of change in the satisfaction of students as well as their evaluation of the dual study path.

As regards the **COURSE CONTENT AND ORGANISATION OF THE STUDY PROCESS** (Likert scale applied: 1= I was strongly satisfied; 2= I was satisfied; 3= I was neither satisfied nor dissatisfied; 4= I was dissatisfied; 5=I was strongly dissatisfied),

the teachers:

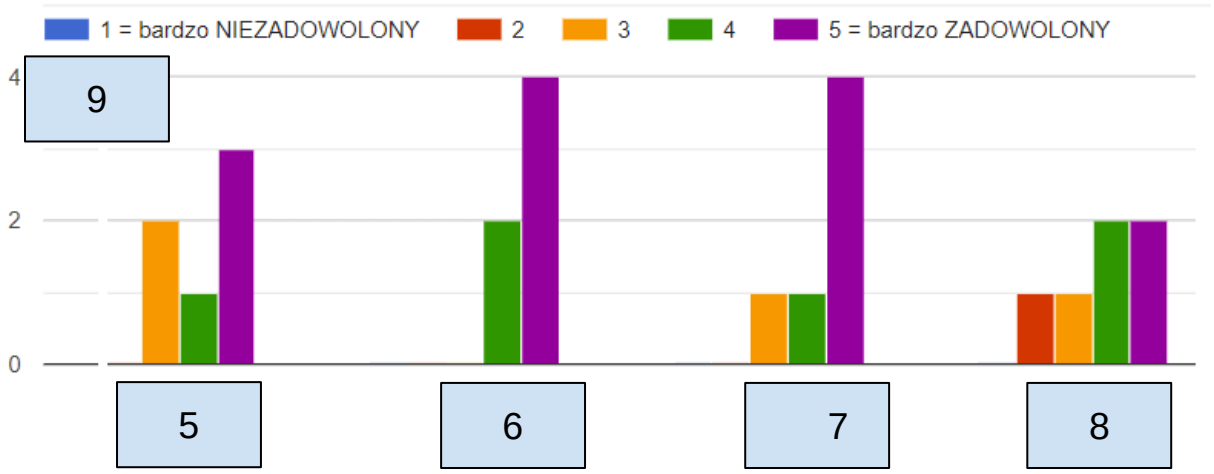


Q1: How do you evaluate the bachelor's dual study programme?

Q2: How do you evaluate the distribution and organisation of the classes included in the dual study program (class schedule) in terms of achieving the goals outlined in the study programme?

Q3: How do you evaluate the duration of the studies?

Q4: How do you evaluate the balance between theoretical and practical classes?



Q5: How do you evaluate the organisation of the studies?

Q6: How do you evaluate the availability of study materials?

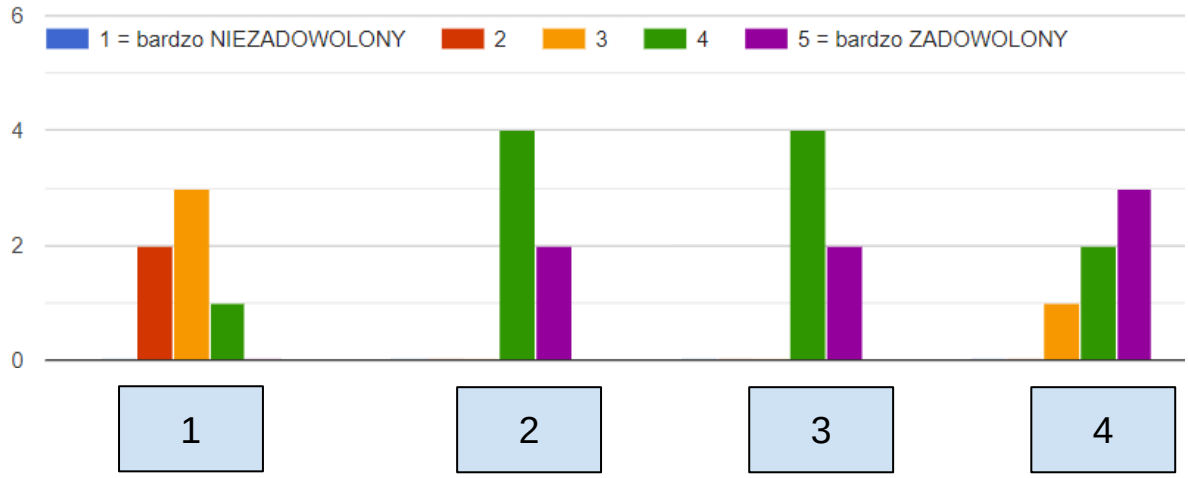
Q7: How do you evaluate the infrastructure available during the studies?

Q8: How do you evaluate the flexibility of the study programme?

Among the comments regarding the study programme and the organisation of the learning/ teaching process, the teachers listed the following:

- the study programme should include more lab classes in cooperation with the companies;
- classes should be taught mostly at weekends to allow the working students to participate in regular university classes;
- the curriculum could be organised in the modular fashion.

As regards the **STUDENT KNOWLEDGE AND ENGAGEMENT** (Likert scale applied: 1= I was strongly satisfied; 2= I was satisfied; 3= I was neither satisfied nor dissatisfied; 4= I was dissatisfied; 5=I was strongly dissatisfied), the teachers:

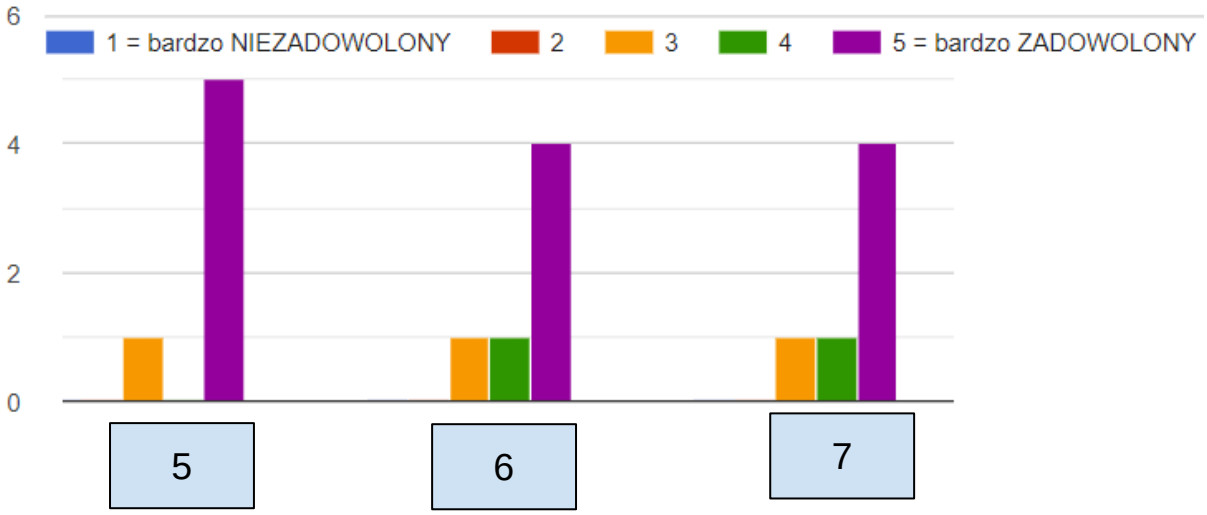


Q1: How do you evaluate the students' knowledge at the beginning of the course?

Q2: How do you evaluate the students' knowledge at the end of the course?

Q3: How do you evaluate the progress made by the students in terms of acquired practical skills?

Q4: How do you evaluate the students' engagement in their studies?



Q5: How do you evaluate the collaboration among students?

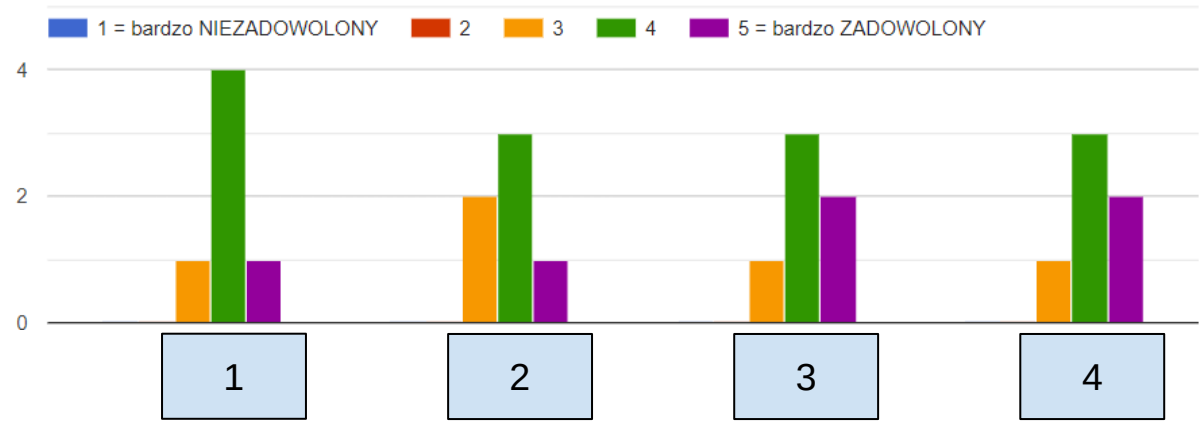
Q6: How do you evaluate the students' organisation and their approach to learning?

Q7: How do you evaluate the students' readiness to work in their profession?

Among the comments regarding student knowledge and engagement in the learning process, the teachers listed the following:

- students had a limited capacity due to their work obligations to fully engage in the learning process;
- students were sometimes absent from classes and they preferred the online teaching/ learning mode;
- some students were reluctant to learn theoretical background (for example, of processes); teachers had to be flexible, giving lots of real-life examples.

As regards the **COOPERATION WITH COMPANIES** (Likert scale applied: 1= I was strongly satisfied; 2= I was satisfied; 3= I was neither satisfied nor dissatisfied; 4= I was dissatisfied; 5=I was strongly dissatisfied), the teachers:



Q1: Companies were involved in the preparation of the study programme.

Q2: Companies were involved in the implementation of the study programme.

Q3: Companies strictly adhered to the study programme.

Q4: Collaboration with companies proceeded without disruptions.\

Among the comments regarding cooperation with the companies, the teachers listed the following:

- greater flexibility of companies as regards the working time (i.e. taking into account the study load of students and their study timetable);
- Companies should provide more guidelines on the outcomes they expect from their employees after completing their studies. This would allow the University to create a programme tailored to even a greater degree to the specific needs;
- the monitoring (evaluation) should concern consecutive phases of the study programme.

Summary of INTERVIEW with Companies

An interview was conducted with a company representative to summarise the cooperation between the University and the Company and to evaluate the implantation of the Dual Bachelor's Degree Programme: Logistics: Green Supply Chains.

- The Company involved in the interview was MARKOS Sp z o.o., represented by Katarzyna Jungling, a contact person at the company.
- The Company underscores **the value of the University reaching out to the Company** with a project that aimed at partnership to implement a dual Bachelor's degree programme; The Management of the Company was introduced to the idea of the study programme and the dual component of the studies.
- The Company emphasises that the drafted **curriculum** and the outline cooperation conditions were **highly evaluated** by the Company Management. The CEOs were in particular enthusiastic about the joint cooperation to implement the dual BA study programme.
- According to the Company, the programme is a valuable element of **upskilling** of the employees. It is also a **financial benefit**, especially for students (the studies are free of charge). The additional advantage is that the Company is involved in the study programme so that **the course contents are better adapted to the needs of the Company**.
- The Company does not see any disadvantages as regards the study programme, however **one of the major obstacles for students was a considerable workload** in the first two semesters of studies.
- According to the Company, the added value of the joint implementation of the dual study programme is the **raising of the awareness of the benefits of lifelong learning**. The development of competencies is possible at any age. Additionally, owing to the implemented study programme, **the competitiveness of**

the Company and the Employees taking part in the study programme is rising.

- The Company **evaluates the cooperation between the Company and the University highly**.
- **The Company is eager to continue cooperation with the University in the realisation of similar projects**.

Final Findings and Results

The surveys were designed in such a way that the answers should help the University to refine the study programme, hone the methodological approach and answer any other needs of the participants. Accordingly, there is no direct compatibility of study questions between the initial and mid-term evaluation surveys.

However, both in the case of STUDENT and TEACHER surveys, there are a few overlapping sections in initial and final evaluations. In student surveys, the overlapping sections are MOTIVATION and STUDY PROGRAMME/ CURRICULUM sections, while in the case of teacher surveys, the overlapping sections concern CONTENT AND ORGANISATION OF THE STUDY. It is therefore important to first analyse these sections as they may reveal the increase or decrease in the overall assessment of the dual degree programme.

1. As regards STUDENT MOTIVATION, the surveys clearly indicate that **students maintained high motivation throughout the study programme**. On the Liker's scale, there is a predominance of 'Agree' and 'Strongly agree' answers in both initial and mid-term evaluations. What can be observed in the mid-term evaluation is a greater awareness of the study process, which - due to some conflicting hours in the work schedule and the study timetable - caused some organisational problems for students (with one student claiming that they had no motivation to attend the classes). The students were motivated by the prospect of getting a better position in their company, gaining recognised qualifications, and improving their skills. They chose the dual study programme because they wanted to learn new skills. There are also extrinsic motivations, such as the requirement in a company to possess skills such as those developed through the study programme.
2. As regards the STUDY PROGRAMME/ CURRICULUM, initial STUDENT surveys show that **initially there was a lack of full understanding of the benefits of the study programme**, with the majority of answers oscillating between 'Neither agree nor disagree' and 'Disagree'. Again, the majority of students found **the study programme** (and in fact - the weekly timetable) **not flexible enough**. On the other hand, most students find **the topics covered by the study programme relevant to them** (and this includes theoretical knowledge, practical skills, the perception of the usefulness of the study content and the training in the company in the work of participants). Overall, the **initial student evaluation reveals that the students do not perceive the overall effectiveness of the**

dual study programme. This changes as the course progresses, with the majority of students saying that they 'Agree' or 'Strongly agree' with the statement that they will recommend the study programme to others. In the mid-way evaluation, the participants clearly indicated that gaining new skills and experience was one of the main motivating factors.

3. As regards TEACHER'S survey, **most of the answers to questions revolving around CONTENT ORGANISATION are positive** ('Agree' and 'Strongly agree'). However, individual teachers were somewhat 'Dissatisfied' with the activities proposed, general curriculum outline, study organisation and its flexibility. This changes in mid-way evaluation, where the majority of answers reveal 'Satisfaction' and 'Strong satisfaction' regarding all of the aspects concerning the programme. The only question yielding mixed results (with two 'Somewhat dissatisfied' answers and one 'Neither satisfied nor dissatisfied answers) is the one related to 'degree of flexibility of the studies'.
4. TEACHERS were **highly satisfied with their PREPAREDNESS** to teach a dual study programme. The issues raised concerned mainly organisational matters, which were later addressed by the university project team and the head of the Institute of Management.
5. Among other general evaluative comments made, the students emphasised the fact that the **studies were free of charge** for them. Some other issues concerned organisational matters, which were later addressed by the university project team (such as flexible timetable and the introduction of the tutoring method/ mode for a number of classes.
6. Overall, as regards the two sections discussed here, there is a **marked positive change in the attitude of the students and teachers towards the dual study programme**. However, one issue raised in the initial evaluation by the teachers proved to materialise, namely the high drop-out rate of students.

Regarding the MID-WAY EVALUATION, it needs to be stated that:

7. The level of student motivation and **satisfaction was relatively high**, with a number of the answers pointing to the advantages of the implemented study programme (e.g. opportunity to obtain a Bachelor's degree, gaining new knowledge, combining knowledge and practical skills, additional English classes).
8. As regards EMPLOYMENT PROSPECTS, students **were highly positive about their future**, seeing the studies as an opportunity to get a new job, earn more money, get a promotion, feel more secure in their current work, and start a new business on their own. This was coupled with a view that they would be able to take on new responsibilities and have greater job satisfaction.
9. The students also **evaluated highly** the elements that have led to the effective training during their studies, including the teachers, the content, the teaching process and the learning materials. Among the issues raised were those connected with (considerable) student workload and not sufficient flexibility (as

regards timetable). **The administrative part of the studies and the introduction of the tutoring method were evaluated highly.**

10. Teachers' evaluation of STUDENT KNOWLEDGE AND ENGAGEMENT has revealed that the study programme was **fully successful as regards the increase of student knowledge**, with a marked increase in the mid-way survey. According to the teachers, students also acquired the necessary practical, collaborative, and organisational skills. Students were also engaged in their study process. Students were evaluated to be prepared to work in their profession.
11. **COOPERATION WITH COMPANIES was evaluated positively**, although respondents emphasised that companies should show greater flexibility as regards the working time of students to account for their study time. also, companies should provide more guidelines on the outcomes they expect from their employees after completing their studies.

Regarding the INTERVIEW WITH THE COMPANY, it needs to be stated that:

12. **The Company is very positive about the cooperation with Pomeranian University in Słupsk**. It emphasises that the University was the one which reached out to the company with a ready-to-be-implemented project.
13. The Company sees **only advantages stemming from the implementation of dual study programme**: Logistics - Green Supply Chains, in particular as regards its upskilling value, which translates into a higher competitiveness of the Company and its Employees.
14. The Company **is willing to implement similar study programmes in the future**.