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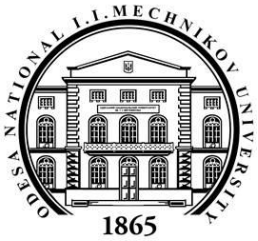

Deliverable of Erasmus+ project

Boosting the role of HEIs in the industrial transformation towards the Industry 4.0 paradigm in Georgia and Ukraine / HEIn4

609939-EPP-1-2019-1-BE-EPPKA2-CBHE-JP

Produced under Activity 2.2.1

HEI: ***Odessa I.I. Mechnikov National University***

SYLLABUS

"Business Management Models for Industry 4.0"

Name of discipline	Integration of Industry 4.0 to Manufacturing Operations
Code and specialty name	073 Management
Name of educational program	Management
Higher education level	Second (master's)
Status of discipline	Selective discipline of the training cycle (professional) training
Scope of the discipline in ECTS	3 ECTS (90 academic hours)
Term of the discipline	1st semester (III quarter)
Name of the department teaching the discipline	Department of Management and Innovations
Leading teacher (lecturer)	Iryna Nyenno, Professor, Doctor of Economics
Language of instruction	Ukrainian
Prerequisites for study	The training is conducted in a specialized laboratory “Specialized classroom Virtual Learning Factory Industry 4.0”. The study should be preceded by the learning of disciplines: - Business Planning, Strategic Management, Risk Management, Business Management Industry 4.0.
Purpose	The discipline is aimed at mastering the theoretical and methodological and practical foundations of development of management and business models, implementation of scientific and methodological, organizational and resource support for their implementation in the fourth industrial revolution Industry 4.0 using software "Virtual Enterprise" and virtual and augmented reality technologies.

Competences provided	Students shall obtain: - Competence to identify the components of the model of management transformation in Industry 4.0. - Competence to identify demand for personal, social and professional competencies in Industry 4.0. - Competence to apply the constitutional rules of management as a basis for building a sustainable business management system in Industry 4.0. - Competence to overcome technological, process, structural, organizational complexity in the control circuit in the conditions of Industry 4.0. - Competence to set the organization goals in Industry 4.0.by overcoming the structural and organizational complexity of business management in Industry 4.0.
Learning outcomes	As a result of study the students must **know:** ✓ the essence and features of constructive and descriptive approaches to defining a business model; ✓ the essence of the archetypes of business models of the Massachusetts Institute of Technology; ✓ principles of creating business models in the conditions of vertical disintegration according to the typification of D. Hoyskel ✓ methodological principles of formation of virtual training factories; **be able to**: ✓ create a competitive management model taking into account the impact of artificial intelligence on the management system; ✓ use the main indicators of efficiency and effectiveness of management in the impact of Industry 4.0. **The discipline ensures the achievement of the following learning outcomes:** ✓ ability to form a systematic scientific worldview, to have modern theories and concepts in the field of management. ✓ ability to plan the activities of the organization in strategic and tactical sections.
Course content	*Module 1*. Business models types in the digital epoch *Module 2*. The resource and organizational provision for business-models in the Industry 4.0 context *Module 3*. Implementation of a business management models in Industry 4.0. *Module 4*. Efficiency and efficacy of the business management models for Industry 4.0

Measurement	Assessment of the Modules is based on the results of questionnaire and assignment. Each module is graded on a 100-point scale. The final grade of the discipline is defined as the arithmetic mean of modular grades.
Specific learning ools/equipment	Use of a multimedia system, application software, Laboratory equipment: Monitor Dell U4320Q with cable HDMI 10m; Motorized Screen Lumi 150”; Multimedia projector XGIMI HALO 3D 4K with cable; Server Dell PowerEdge T40v14 64G; Specialized software for 3D visualization; Software license Business Studio 5 Enterprise + Business Studio Portal 5, etc.

Recommended literature	*Ukrainian:* 1. Nyenno I.M. Creating effective business models for the development of seaports: macropolitical and microeconomic aspects: a monograph. Odessa: ONU named after II Mechnikova, 2017. 474 p. 2. Nyenno I.M. Digital public goods as a basis for achieving the goals of sustainable development of the state. Market economy: modern theory and practice of management. 2021. Volume 20 № 2 (48). pp. 116-127. *English:* 3. ERASMUS+ «Boosting the role of HEIs in the industrial transformation towards the Industry 4.0 paradigm in Georgia and Ukraine (HEIn4). http://www.hein4.net 4. Nitsenko, V., Nyenno, I., Kryukova, I., Kalyna, T., Plotnikova, M. Business model for a sea commercial port as a way to reach sustainable development goals. Journal of Security and Sustainability Issues. 2017. September. Vol. 7. № 1. P. 155–166. (Scopus) 5. Nyenno I. M. Competitive response of China's hybrid business model to the pressure of globalization. / I. M. Nyenno, O. V. Rudinska, A. I. Sheremet // Економічний журнал Одеського політехнічного університету. – 2019. – № 3 (9). – С. 84-90. – Режим доступу до журн.: https://economics.opu.ua/files/archive/2019/No3/84.pdf 6. Osterwalder A., Pigneur Y. Business Model Generation. Hoboten, New Jersey : John Wiley & Sons, Inc., 2010. 288 p. 7. Digital Business Model for Industry 4.0. Available online. https://www.bmwi.de/Redaktion/EN/Publikationen/Industry/digital-business-models-industry-4-0.pdf?__blob=publicationFile&v=3 8. Abele, Eberhard, Joachim Metternich, Michael Tisch, George Chryssolouris, Wilfried Sihn, Hoda ElMaraghy, Vera Hummel, and Fabian Ranz. 2015. "Learning Factories for Research, Education, and Training." Procedia CIRP 32 (Clf): 1–6. https://doi.org/10.1016/j.procir.2015.02.187. 9. Nyenno I., Nitsenko V., Levinska T. Theory and methodology of business-model formation. Wielowymiarrowosc kategorii bezpieczenstwa. Wymiar prawny, ekonomiczno-spoleczny i miedzynarodowy, red. K. Sygidus, P. Lubinski, D. Svyrydenko, Bookmarked Publishing and Editing, Olsztyn – Krakow-Kijow 2018. P. 93-120. 10. Business Studio Manual. https://www.businessstudio.ru/wiki/docs/current/doku.php/ru/manual/manual 11. VRinSight Best Practice Showcase. 25 best practice examples of VR applications and software suitable for Higher Business Management education. https://www.vrinsight.org/downloads/

Workload

	Total
Total hours according to the curriculum	90
including: **Classroom**	
of which: - lectures	26
- laboratory work	10
- practical classes	4
- seminars	0
Independent work	50
including: - preparation for classroom classes	10
- preparation for modular control activities	0
- implementation of course projects (works)	0
- implementation of individual tasks	30
- elaboration of sections of the program that are not taught in lectures	20
Semester control	Exam

Approved at the meeting of the quality assurance group of the educational program " Management " (Protocol № 1 of 31.08.2021).
Guarantor of the educational program, Prof. E. Maslennikov