BUSINESS MANAGEMENT FOR INDUSTRY 4.0

Study program: 073 «Management»

Рік навчання: 4

Credits: 3

Lecturer: Doctor of Economics, Professor **Iryna Nyenno**

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Опис дисципліни

The discipline is aimed at forming knowledge of the theory and practice of organizing and conducting business in the fourth industrial revolution. The course is developed within the project HEIn4.0 "Strengthening the role of free economic transformation in the industrial transformation to the paradigm" Industry 4.0 "in Georgia and Ukraine" (Boosting the role of HEIs in the industrial transformation towards the Industry 4.0 paradigm in Georgia and Ukraine (HEIn4) ERASMUS +) . The training is conducted in a specialized laboratory with software developed with the participation of Volvo Cars.

Prerequisite for studying the discipline is the mastery of such disciplines as Management, Leadership, Business Planning, Innovation Economics..

Course strucutre

Topic	Learning outcomes	Tasks
1. Theoretical principles and practical approaches to the management of the digital age	Understand the key trends and processes of Industry 4.0: Big Data Analytics; Autonomous works; Modeling; Horizontal and vertical integration; Industrial Internet of Things; Cybersecurity; Clouds; Additive production; Virtual reality	Questions, tasks, cases, presentations
2. The main features of the way Industry 4.0	Understand the main features of industry 4.0: (1) interaction - the ability of cyberphysical systems to independently integrate and interact with each other through the Internet of Things and Internet services, where cyberphysical systems are industrial equipment, robots, CNC machines and diagnostic modules combined with information systems, in which there is a modeling and control of technological processes. This also applies to the emergence of so-called digital factories (smart factories or smart factories), which are built on the basis of cyberphysical systems. (2) virtualization - integration of simulation and virtual information models with real technological processes, both at the stage of process design and during their implementation. (3) decentralization - the ability of cyberphysical systems to make independent decisions based on artificial intelligence technologies. (4) real-time operations - the ability of cyberphysical systems to analyze technological and production data and provide them to the general industrial network, which requires processing Big Data.	Questions, tasks, cases, presentations
3. Implementation of a business	Be able to determine the level of digitalization of projects and enterprises using the software product SMEART. Be able to build the architecture and modeling of management information systems. Be able to model and simulate industrial	Questions, tasks, cases, presentations

management project in Industry 4.0.	processes. Understand the process of using smart distribution systems and hybrid control systems.	
4. Advanced technologies of Industry 4.0 in the content and means of modern education	Introduce the Internet of Things - remote access training laboratories; remote laboratory stands. Understand the process of additive production - 3D-printers in training workshops; 3D-modeling (from the disciplines of computer science, mathematics); production of parts for robots, technical devices in additional education of students; production of additives Apply guidelines for the use of artificial intelligence, machine learning and robotics - the use of avatars and chatbots in the learning process for consultation, testing and design of individual learning routes for students	Questions, tasks, cases, presentations

Literature

1. 1. "Strengthening the role of free economic transformation in the industrial transformation to the paradigm" Industry 4.0 "in Georgia and Ukraine" (Boosting the role of HEIs in the industrial transformation towards the Industry 4.0 paradigm in Georgia and Ukraine (HEIn4) ERASMUS + project). http://onu.edu.ua/uk/academic-projects
2. Nyenno IM, Grinchenko YL Innovative forms of integration in high-tech sectors of the economy. Innovative economy: theoretical and practical aspects: monograph / L.O. Voloshchuk, Ye.I. Maslennikov, EA Kuznetsov, Yu.M. Safonov, S.V. Filippova and others. ; for order. Doctor of Economics, Assoc. L.O. Voloshchuk, Doctor of Economics, Prof. Ye.I. Maslennikov. - Kherson: OLDI-PLUS, 2019. - Issue 4. - 524 p. - with. 483 - 504.
3. Nyenno IM Creating effective business models for the development of seaports: macropolitical and microeconomic aspects: a monograph. Odessa: ONU named after II Mechnikov, 2017. 474 p.
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5. Carlsberg, Carolin Moeller; Jan Smit; Stephan Kreutzer; alin. 2016. “Industry 4.0 Analytical Study.” European Parliament. https://doi.org/10.1017/CBO9781107415324.004.
6. Cotteleer, Mark, and Brenna Sniderman. 2017. “Forces of Change: Industry 4.0.” Deloitte Insights, 1–20. https://doi.org/10.1007/s11947-009-0181-3.
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9. Mourtzis, D., E. Vlachou, G. Dimitrakopoulos, and V. Zogopoulos. 2018. “Cyber- Physical Systems and Education 4.0 -The Teaching Factory 4.0 Concept.” Procedia Manufacturing 23 (2017): 129–34. https://doi.org/10.1016/j.promfg.2018.04.005.
10. 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.
11. Rojko, Andreja. 2017. “Industry 4.0 Concept: Background and Overview.” International Journal of Interactive Mobile Technologies 11 (5): 77–90. https://doi.org/10.3991/ijim.v11i5.7072.

Політика оцінювання

Політика щодо дедлайнів та перескладання: Роботи, які здаються із порушенням термінів без поважних причин, оцінюються на нижчу оцінку (-10%). Обов'язкова присутність студентів на модульному та підсумковому контролі. Перескладання відбувається із дозволу деканату за наявності поважних причин.

Політика щодо академічної доброчесності: регламентується Положенням про запобігання та виявлення академічного плагіату у освітній та науково-дослідній роботі учасників освітнього процесу та науковців Одеського національного університету імені І.І. Мечникова (наказ №21-02 від 22.02.2018 р.).

Політика щодо відвідування: Відвідування занять є обов'язковим. За об'єктивних причин в окремих випадках за погодженням з деканатом і керівником курсу навчання може відбуватися дистанційно.

Оцінювання

Види оцінювання	% від остаточної оцінки
Модуль 1 (теми 1-2) – опитування під час занять, поточне тестування, розв'язки задач, підсумкова модульна контрольна робота	30
Модуль 2 (теми 3-4) – опитування під час занять, поточне тестування, розв'язки задач, підсумкова модульна контрольна робота	30
Модуль 3 – ІНДЗ (розробка проєкту «Управління бізнесом» в контексті впливу Industry4.0 в лабораторії)	20
Модуль 4 – екзамен: питання, задачі	20