

Course name:**INTEGRATED MANUFACTURING SYSTEMS**

ECTS	2
Course status	complementary
Course final assesement/evaluation of outcomes	credit
Prerequisites	none

Main field of study:**PRODUCTION ENGINEERING**

Profile of study	General-academic
The code of studies (education level)	SI (bachelor)
Semester of studies	winter
Language of instruction	English

Course offered by:

Name of faculty offering the course	Faculty of Production Engineering and Energetics
Name of department offering the course	Department of Production Engineering, Logistics and Applied Informatics
Course coordinator	Aleksandra Lis

Learning outcomes of the course:

Symbol of outcome	Description of learning outcome	Reference to	
		main field of study outcomes	discipline#
KNOWLEDGE – student knows and/or understands:			
YSW_W1	the essence and principles of functioning of flexible production systems	ZIP1_W07	TZ
YSW_W2	methods and scope of optimizing production processes	ZIP1_W07	TZ
SKILLS – student is able to:			
YSW_U1	plan material needs and the use of production resources	ZIP1_U10	TZ
YSW_U2	optimize production schedules and production batch size	ZIP1_U10	TZ
SOCIAL COMPETENCE- student is ready to:			
YSW_K1	acting responsibly as an engineer in solving problems related to the implementation of modern manufacturing systems into practice	ZIP1_K04	TZ

Teaching contents:

Lectures	15	hours
Topics of the lectures	Integrated manufacturing systems and their elements. Integration conditions and elements integrating production systems. Basic types and elements of flexible production systems. Modern methods of controlling the production process. Modern methods of controlling the production process.	

Computer integrated manufacturing systems CIM.

Accomplished learning outcomes	YSW_W1, YSW_W2, YSW_K1
Verification methods, rules and criteria of outcome assessment	Written assignment Final grade share - 40%

Classes **15** **hours**

Topics of the classes	Diagnosis of production processes, their interrelationships and efficiency. Diagnosis of production processes, their interrelationships and efficiency. Production scheduling. Optimization of the production batch size. Flexible manufacturing systems and production efficiency. Industry 4.0 solutions as a production optimization tool.
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Accomplished learning outcomes	YSW_U1, YSW_U2
Verification methods, rules and criteria of outcome assessment	Written assignment (GROUP PROJECT) Final grade share - 60%

Seminars ... **hours**

Topics of the seminars	
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Accomplished learning outcomes	symbol of learning outcomes of the seminars
Verification methods, rules and criteria of outcome assessment	Written assignment (group project) Final grade share - 60%

References:

Basic	Compton, W. D. (Ed.). (1988). <i>Design and analysis of integrated manufacturing systems</i> . National Academies Press.
Supplementary	Qu, Y. J., Ming, X. G., Liu, Z. W., Zhang, X. Y., & Hou, Z. T. (2019). <i>Smart manufacturing systems: state of the art and future trends</i> . <i>The International Journal of Advanced Manufacturing Technology</i> , 103, 3751-3768.

Structure of learning outcomes:

Discipline: Field - social sciences, discipline - management and quality sciences	2	ECTS**
Discipline: # (provide appropriate symbol - if the course relates to more than one academic disc	...	ECTS**

Structure of student activities:

Contact hours	30	hours	1,3	ECTS**
including:				
lectures	15	hours		
classes and seminars	15	hours		
consultations	5	hours		
participation in research	0	hours		
mandatory traineeships	0	hours		
participation in examinations	0	hours		
e-learning	0	hours	0	ECTS**
student own work	17,5	hours	0,7	ECTS**

* where 10 hours of classes = 1 ECTS (in case of 15 h → 2 ECTS)

** stated with an accuracy to 0.1 ECTS, where 1 ECTS = 25 - 30 hours of classes

academic discipline code: RZ - animal science and fishery, PB - biological sciences, etc.