STUDY MODULE DESCRIPTION FORM

Name of the module/subject	Code
Computer aided manufacturing	**1011102331011115175**

Field of study	Profile of study (general academic, practical)	Year /Semester
Engineering Management - Full-time studies -	**general academic**	**2 / 3**

Elective path/specialty	Subject offered in:	Course (compulsory, elective)
Production and Operations Management	**Polish**	**elective**

Cycle of study:	Form of study (full-time,part-time)
Second-cycle studies	**full-time**

No. of hours	No. of credits
Lecture: **15** Classes: **-** Laboratory: **15** Project/seminars: **15**	**4**

Status of the course in the study program (Basic, major, other)	(university-wide, from another field)
other	**university-wide**

Education areas and fields of science and art	ECTS distribution (number and %)
technical sciences	**4 100%**
Technical sciences	**4 100%**

Responsible for subject / lecturer:

dr dr hab. inż. Marek Fertsch, prof. nadzw.
email: marek.fertsch@put.poznan.pl
tel. tel. 061 665 34 01
Inżynierii Zarządzania
ul. Strzelecka 11, 60-965 Poznań, tel. (61) 665 3374

Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Knowledge of the organization of flexible manufacturing systems and modern concepts of production control.
2	**Skills**	Efficient use of basic computer techniques.
3	**Social competencies**	Ability to work in a team.

Assumptions and objectives of the course:

To acquaint students with the nature and operation of computer-integrated manufacturing systems. Knowing the students the basic features of these systems, their enforcement and the difficulties of this task.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. It has in-depth knowledge of clusters, forms of multinational corporations and virtual enterprises. - [K2A_W04]
2. Has knowledge about the relationship occurring in corporations and holding companies, and in-depth knowledge of organizational relationships that exist between organizational units of the company - [K2A_W05]
3. He knows the way dredged methods and tools for process modeling information - [K2A_W08]
4. He knows the methods modeling tools and decision-making processes - [K2A_W09]

Skills:

1. Can use theoretical knowledge to describe and analyze the causes and processes and phenomena of social (cultural, political, legal, economic) and is able to formulate their own opinions and choose critical data and methods of analysis - [K2A_U02]
2. Can correctly analyze the causes and course processes and phenomena of social (cultural, political, legal, economic), formulate their own opinions on the subject and put simple hypotheses and verify them - [K2A_U03]
3. Has the ability to use the acquired knowledge in different areas and forms, extended on a critical analysis of the effectiveness and the usefulness of applied knowledge - [K2A_U06]

Social competencies:

1. It has a sense of responsibility for own work and a willingness to comply with the principles of teamwork and responsibility for jointly implemented tasks - [S2A_K02]
2. He can see the cause and effect in the implementation of its goals and define importance of alternative or competitive tasks - [S2A_K03]
3. Is aware of interdisciplinary knowledge and skills needed to solve complex problems of organization and the need to create interdisciplinary teams - [S2A_K06]

Assessment methods of study outcomes

Forming Rating:

Rating made on the basis of the project. Rating laboratory based on the student's progress and on the basis of answers to questions concerning the material discussed in previous classes.

Rating summary:

Based on the analyzes (including case studies), assessments and plans and final test.

Course description

The lecture begins with an explanation of "computer-integrated manufacturing." Discussed are the basic modules of CIM - CAD (computer-aided design, CAPP (computer-aided design technology), CAM (computer aided manufacturing), PPC (production planning), CAQ (computer-aided quality management). The are variants of the individual modules and their possible configurations. presented is the process of implementation of CIM. in some cases discussed are difficulties associated with this process.

During the course of design students work on design assumptions for the implementation of CIM in the selected company.

In the laboratory students become familiar with the operation of selected modules of CIM.

Teaching methods: conventional specialist lecture, laboratory exercises using a CAD system, team project of a selected module, work with literature

Basic bibliography:

1. M.P. Groover M.P., Automation, production systems, and computer-integrated manufacturing, Pearson Education India, 2016

2. Knosala M., (red.) Komputerowo zintegrowane zarządzanie, WNT, Warszawa, 2007

3. Fertsch M., Grzybowska K., Stachowiak A., (2007), Standard CALS/OASIS-geneza, podstawy teoretyczne i stan obecny, [w:] Fertsch M., Grzybowska K., Stachowiak (red.), Logistyka i zarządzanie produkcją-nowe wyzwania, odległe granice, monografia wydana przez Instytut Inżynierii Zarządzania, Politechnika Poznańska 2007

4. Fertsch M., Grzybowska K., Stachowiak A., (2008), Modele systemów produkcyjnych i logistycznych-próba klasyfikacji, [w:] Fertsch M., Grzybowska K., Stachowiak (red.), Logistyka i zarządzanie produkcją: narzędzia, techniki, metody, modele, systemy, monografia wydana przez Instytut Inżynierii Zarządzania, Politechnika Poznańska 2008

5. Plichta J., Plichta S., Komputerowo zintegrowane wytwarzanie, Wydawnictwo Uczelniane Politechniki Koszalińskiej, Koszalin, 1999.

Additional bibliography:

1. Brzeziński M., Organizacja i sterowanie produkcją. Projektowanie systemów produkcyjnych i procesów sterowania produkcją, Agencja Wydawnicza Placet, Warszawa 2002

2. Dagli C.H.(ed.), Artificial neural network for inteligent manufacturing , Chapman & Hall, London, 1994

Result of average student's workload

Activity	Time (working hours)
1. Lecture	15
2. Laboratory	15
3. Projects	15
4. Preparation for classes	40
5. Consultations	10
6. Preparation for the exam	10
7. Exam	3

Student's workload

Source of workload	hours	ECTS
Total workload	108	4

Contact hours	58	2
Practical activities	80	2