



Module name: Computer aided manufacturing

Academic year: 2013/2014 Code: RMS-1-604-s ECTS credits: 3

Faculty of: Mechanical Engineering and Robotics

Field of study: Mechatronics with English as instruction language Specialty: —

Study level: First-cycle studies Form and type of study: Full-time studies

Lecture language: English Profile of education: Academic (A) Semester: 6

Course homepage: —

Responsible teacher: dr inż. Śliwa Zbigniew (zслиwa@agh.edu.pl)

Academic teachers: dr inż. Śliwa Zbigniew (zслиwa@agh.edu.pl)

## Description of learning outcomes for module

MLO code	Student after module completion has the knowledge/ knows how to/is able to	Connections with FLO	Method of learning outcomes verification (form of completion)
Social competence			
M_K001	understanding of the need of individual learning and constant development of own professional competences, proper attitude to undertaken tasks as well as responsibility for personal and team's results	MS1A_K01, MS1A_K04, MS1A_K03	Activity during classes, Report, Involvement in teamwork
Skills			
M_U001	ability to acquire information from lectures, documentation and another sources, select it and interpret for the use in own design works.	MS1A_U01	Report, Execution of laboratory classes, Test results
M_U002	ability to design and verify by simulation the given manufacturing process and manufacturing line by means of properly chosen computer aided design tools.	MS1A_U08	Activity during classes, Execution of laboratory classes, Test results
M_U003	ability to develop a report on the design task done individually or as a member of team	MS1A_U03	Report
Knowledge			

M_W001	knowledge and understanding of methods applicable to manufacturing process design as well as techniques provided by CAM systems dedicated to designing of manufacturing lines and processes.	MS1A_W12	Execution of laboratory classes, Test results
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## FLO matrix in relation to forms of classes

MLO code	Student after module completion has the knowledge/ knows how to/is able to	Form of classes										
		Lectures	Auditorium classes	Laboratory classes	Project classes	Conversation seminar	Seminar classes	Practical classes	Others	Fieldwork classes	Workshops	E-learning
Social competence												
M_K001	understanding of the need of individual learning and constant development of own professional competences, proper attitude to undertaken tasks as well as responsibility for personal and team's results	-	-	+	-	-	-	-	-	-	-	-
Skills												
M_U001	ability to acquire information from lectures, documentation and another sources, select it and interpret for the use in own design works.	-	-	+	-	-	-	-	-	-	-	-
M_U002	ability to design and verify by simulation the given manufacturing process and manufacturing line by means of properly chosen computer aided design tools.	-	-	+	-	-	-	-	-	-	-	-
M_U003	ability to develop a report on the design task done individually or as a member of team	-	-	+	-	-	-	-	-	-	-	-
Knowledge												
M_W001	knowledge and understanding of methods applicable to manufacturing process design as well as techniques provided by CAM systems dedicated to designing of manufacturing lines and processes.	+	-	-	-	-	-	-	-	-	-	-

## Module content

### Lectures

Methodology of manufacturing processes designs: milling, turning and drilling operations, with the tools provided by advanced CAD/CAM system. Application of machining tools databases, their enhancements and editions. Simulations of machining processes, analyses and modifications. Configuration of software modules for particular tasks. Designing of manufacturing lines and processes performed on those lines. The use of simulation modules capable to verify design variants of manufacturing lines. Presentations of chosen examples.

### Laboratory classes

Individual and teamwork tasks on manufacturing processes design and production lines design with the use of CAD/CAM system, properly configured on the basis of knowledge acquired on lectures and in result of individual learning. Verifications and modifications of design work results by means of computer simulations. Modifications and enhancements of databases integrated to the software. The task documentation in the form of written reports.

### Project classes

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## Method of calculating the final grade

Weighted mean laboratory grade.

## Prerequisites and additional requirements

Basic computer skills: file operations, Internet, MS Windows, text editor, calculation sheet.

Ability to make technical drawings.

Basic knowledge on machining and manufacturing technologies.

Basic knowledge on manufacturing materials

## Recommended literature and teaching resources

[1] Augustyn K., EdgeCAM. Komputerowe wspomaganie wytwarzania

[2] Olszak W., Obróbka skrawaniem

[3] Mikulczyński T., Automatyzacja procesów produkcyjnych.

[4] Linie produkcyjne - nowoczesne systemy produkcji, <http://www.designnews.pl/menu-gorne/artukul/article/linie-produkcyjne-nowoczesne-systemy-produkcji/>

[5] Praca zbiorowa: Programowanie w systemie Delmia robotów przemysłowych dla zadań paletyzacji i spawania, [http://www.procax.org.pl/plik /Artykul\\_10\\_Slota\\_Krupa\\_Konicki\\_Doktor.pdf](http://www.procax.org.pl/plik /Artykul_10_Slota_Krupa_Konicki_Doktor.pdf)

[6] CATIA V5 - Documentation on line

[7] DELMIA - Documentation on line

Pomoce naukowe: Stanowiska komputerowe z oprogramowaniem CATIA V5 i DELMIA V5

## Scientific publications of module course instructors related to the topic of the module

Additional scientific publications not specified

## Additional information

None

**Student workload (ECTS credits balance)**

Student activity form	Student workload
Participation in lectures	15 h
Participation in laboratory classes	30 h
Contact hours	2 h
Preparation for classes	15 h
Preparation of a report, presentation, written work, etc.	15 h
Realization of independently performed tasks	10 h
Summary student workload	87 h
Module ECTS credits	3 ECTS