STUDY MODULE DESCRIPTION FORM

Name of the module/subject **CAD/CAM**		Code **1010641161010640320**

Field of study **Mechanical Engineering**	Profile of study (general academic, practical) **(brak)**	Year /Semester **3 / 6**

Elective path/specialty **Mechatronics**	Subject offered in: **Polish**	Course (compulsory, elective) **obligatory**

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

No. of hours				No. of credits **4**
Lecture: **1**	Classes: **1**	Laboratory: **2**	Project/seminars: **-**	

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

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

Responsible for subject / lecturer:

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Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	News from the basics of computer-aided design and engineering graphics. Knowledge of modeling in 3D CAD systems
2	**Skills**	Efficient use of Microsoft Orfice, the ability to model parts and assemblies in systems CAD3D
3	**Social competencies**	Able to work in a group performing different roles

Assumptions and objectives of the course:

Knowledge of principles and methods for recording design in CAD / CAM systems.

Knowing the rules of using the computer system exemplary CAD / CAM.

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

Knowledge:

1. Has a basic knowledge of the standardized principles of engineering drawing and engineering graphics - [K1A_W06]

2. Has an elementary knowledge of the fundamentals of computer science, i.e. computer architecture, binary, decimal, and hexadecimal counting system. - [K1A_W13]

Skills:

1. Is able to use popular packages for technical drawings edition and 3D modeling in sufficient detail to enable the creation of documentation in accordance with the applicable standards and models of virtual machines in three-dimensional space. - [K1A_U12]

2. Is able to design a technology of simple machine element manufacturing, technology of assembly and disassembly of a machine. - [K1A_U18]

Social competencies:

1. Understands the need for lifelong learning; is able to inspire and organize the learning process of others - [K1A_K01]

2. Is aware of and understands the importance and impact of non-technical aspects of mechanical engineering activities and its impact on the environment and responsibility for own decisions. - [K1A_K02]

3. Is aware of the importance of behavior in a professional manner, compliance with the rules of professional ethics and respect for cultural diversity. - [K1A_K03]

4. Has a sense of responsibility for one?s own work and is willing to comply with the principles of teamwork and taking responsibility for collaborative tasks. - [K1A_K04]

Assessment methods of study outcomes
Lecture, lab credit.

Course description
The structural geometry of the solid. The structural geometry of the surface. Methods of describing mathematical curves in 3D CAD computer systems. Hermit approximating curves and Bezier, B-spline curves, surfaces, bezier and B-spline. Transforming 3D space. Animations, generating a sequence of images. Developing, editing and archiving of technical documentation in CAD / CAM systems. Translation CAD geometry formats for 2D and 3D. CAM machining methods, the development of CAM machining, machine tool programming using CAM.

Basic bibliography:

1. Przybylski W., Deja M., Komputerowo wspomagane wytwarzanie maszyn. WNT, Warszawa 2007

2. Marciniak K, Putz B., Wojciechowski J., Obróba powierzchni krzywoliniowych na frezarkach sterowanych numerycznie. WNT, Warszawa 1988

3. Marciniak M (red) Elementy automatyzazcji we współczesnych procesach wytwarzania. Wydawnictwo Politechniki Warszawskiej 2007

4. Altinas Y., Manufacturing Automation, Cambridge University Press 2006

5. Honczarenko J. Obrabiarki sterowane numerycznie WNT Warszawa 2008

Additional bibliography:

1. Kiciak P. Podstawy modelowania krzywych i powierzchni : zastosowania w grafice komputerowej WNT 2005

Result of average student's workload	
Activity	**Time (working hours)**
1. Participation in lectures	15
2. Consultation on the material given in lectures	2
3. Exam Preparation	10
4. Participation in the exam	2
5. Laboratory classes	30
6. Preparation for laboratory	15
7. Preparing to pass laboratory	10
8. Participation in class exercises	15
9. Preparing to pass exercises	10

Student's workload		
Source of workload	**hours**	**ECTS**
Total workload	109	4
Contact hours	64	2
Practical activities	55	2