STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Computer Aided Process Planning**		Code **1010222531010227284**
Field of study **Management and Production Engineering**	Profile of study (general academic, practical) **general academic**	Year /Semester **2 / 3**
Elective path/specialty **-**	Subject offered in: **Polish**	Course (compulsory, elective) **elective**

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

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

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

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

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Basics knowledge on management, material endurance (durability), process planning
2	**Skills**	Student is able to obtain information from literature, databases and other sources; has abilities of the self-education for improving qualifications and the update of professional competence
3	**Social competencies**	Student is aware of a need to expand his competence and readiness to undertake the cooperation in the team; has an awareness of the importance and understands other aspects of engineering activity, including its influence on the environment

Assumptions and objectives of the course:

Student should obtain knowledge of computer aided process planning and of the tools and methods applied in CAx programs

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

Knowledge:

1. Student knows the role of the classification and the standardization in the technology - [K_W07, K_W10]

2. Student knows the principles and the structure of classifiers, their importance and principles of using in technology planning - [K_W10]

3. Student knows the computer aided process planning methods, their variants and scope of utilisation - [K_W07, K_W10]

4. Student knows in the basic scope tools and methods used in CAx programs: decision trees, decision tables, expert programs, artificial intelligence, neural networks - [K_W10]

5. Student knows in the basic scope OSN programming principles with use of simulators - [K_W10]

Skills:

1. Student is able to work with the simulator for the OSN programming at the basic scope   - [K_U09, K_U14, K_U15]

2. Student is able in the basic scope to prepare the proces plan in program Sysklass - [K_U09, K_U14, K_U15]

3. Student is able to to determine the principles of the build of the classifier of objects (parts) for the purposes of technology planning - [K_U14, K_U15]

Social competencies:

1. Student is aware to undertake the cooperation in the team - [K_K03]

2. Student is conscious of the role of the computer aided process planning in the contemporary economy and for the society - [K_K02, K_K07]

Assessment methods of study outcomes
Written test

Course description

Development of uses of computer science in factory, introducing to computer aided systems - from partial solutions and simply programs, training of workers, to integrated systems, computer aid in department of technology in factory, methods of computer aid process planning, group technology, the standardization, typification, methods of the typification of the technology, classification, classifiers, computer aided works of the technologist, conditions and criteria of the automation of the system of the design, methods of process planning with computer aid, technological processes for conventional machine tools, variant designing, planning on the base of the individual technological processes, process planning based on typical technological processes, process planning based on group processes, generational design - based on the synthesis of the technological process, data bases in CAPP programs, tools and methods in computer aided process planning, decision trees, decision tables, the artificial intelligence and methods of the knowledge representation, decision-making criteria, structure of the computer aided process planning system, description of the part, designing of the semi-finished product, designing of the structure of the process, designing of the structure of the operation, computer aid of standard piece time calculation, calculation or estimation of costs, the structure of tools for technological processes planning, useful features of selected systems, computer aid of selected elements of process planning with POLCAP and SYSKLASS, integrated solutions - CIM, elements of system of class CIM

Exercises: computer aided process planning for conventional machine tools with variant method in the SYSKLASS program: analysis and the evaluation of the functions and possibilities of the program in process planning, databases in Sysklass, technology planning, entering algorithms calculating elements of the technical norm of time in the program - assessment of the possibilities and of application, comparing the Sysklass program with the other programs - POLCAP, alternative options of the Sysklass program

Laboratory: OSN programming with using simulators

Basic bibliography:

1. Chlebus E., Techniki komputerowe CAx w inżynierii produkcji, WNT, Warszawa, 2000

2. Knosala R., Zastosowania metod sztucznej inteligencji w inżynierii produkcji, WNT, Warszawa, 2002

Additional bibliography:

1. Matuszek J., Plinta D, System komputerowego wspomagania projektowania procesów wytwarzania SYKLASS, wyd. PŁ Filia w Bielsku-Białej, Bielsko-Biała , 2000

2. Uniejewski J., Wieczorowski K., Projektowanie procesów technologicznych wspomagane komputerowo pakietem programów POLCAP, Zakład Projektowania Technologii, ITM PP, monografia, Poznań, 1997

Result of average student's workload	
Activity	**Time (working hours)**

Student's workload		
Source of workload	**hours**	**ECTS**
Total workload	105	4
Contact hours	75	3
Practical activities	30	1