**Nazwa przedmiotu:**

Manufacturing Technology

**Koordynator przedmiotu:**

prof. dr hab. inż. Jerzy Nowacki (prof. dr hab. Lucjan Dabrowski)

**Status przedmiotu:**

Obowiązkowy

**Poziom kształcenia:**

Studia I stopnia

**Program:**

Aerospace Engineering

**Grupa przedmiotów:**

Wspólne

**Kod przedmiotu:**

ANK399

**Semestr nominalny:**

3 / rok ak. 2009/2010

**Liczba punktów ECTS:**

2

**Liczba godzin pracy studenta związanych z osiągnięciem efektów uczenia się:**

**Liczba punktów ECTS na zajęciach wymagających bezpośredniego udziału nauczycieli akademickich:**

**Język prowadzenia zajęć:**

polski

**Liczba punktów ECTS, którą student uzyskuje w ramach zajęć o charakterze praktycznym:**

**Formy zajęć i ich wymiar w semestrze:**

|  |  |
| --- | --- |
| Wykład:  | 30h |
| Ćwiczenia:  | 0h |
| Laboratorium:  | 0h |
| Projekt:  | 0h |
| Lekcje komputerowe:  | 0h |

**Wymagania wstępne:**

Basic knowledge of materials, their constructional properties and mach inability. heat treatment methods. Basic knowledge of processing methods

**Limit liczby studentów:**

**Cel przedmiotu:**

The presentation of contemporary methods of manufacturing of machines elements, devices and the structure and their influence on properties of the product, analysis of produce ability of designed products

**Treści kształcenia:**

The technological process as the sequence of functional properties forming. Basic model of a production process. Process control and supervision Properties of metals susceptible to plastic processing. The plastic state by principles and the possibility of a plastic deformation of metals. Properties of semi-finished products Shaping elements by rolling, forging or pressing, die forging, extrusion, drawing, Stamping, and others. Products obtained in the rolling plastic working process, and their properties. Foundry as one of the basic technologies for the manufacturing of objects castings from metals and their alloys. Classification of casting application. Main processes of castings production. Casting design productivity related to the processes and quality. Preparation of molds, cores, liquid metals added tools. Solidification, Casting production and their properties. Types of machining processes (machine tools, machining accuracy), work-piece positioning, work-piece clamping, jigs and fixtures, dimensioning in machining operations, general rules for machining process planning, application of CNC machines and machining centers, some aspects of CNC programming, cellular manufacturing, flexible machining cells, programming of flexible robotized machining cells. Cutting tools, Abrasive processes, grinding. Joining processes. General characteristics. Brazing, Standard symbols for wells. FW, FSW processes. Surface technology surface finishing. Coatings, surface treatments. Powder Metallurgy. Sinters forming, sintering sinters finishing. Cermets. Sinters properties, application and design.

**Metody oceny:**

Short tests following every lecture and final test.

**Egzamin:**

**Literatura:**

- Serope Kalpakjian Manufacturing Engineering and Technology, Addison-Wesley Publishing Company, 1992 - http://www.cim.pw.edu.pl/lzp Additionally: Wit Grzesik Advanced Machining Processes of Metallic Materials: Theory, Modelling and Application, Elsevier Science Ltd., 2008

**Witryna www przedmiotu:**

**Uwagi:**

## Efekty przedmiotowe