# STUDY MODULE DESCRIPTION FORM

| Name of the module/subject | | Code |
|---|---|---|
| **Technological machines** | | **1011105341011112395** |
| Field of study | Profile of study (general academic, practical) | Year /Semester |
| **Engineering Management - Part-time studies -** | **general academic** | **2 / 4** |
| Elective path/specialty | Subject offered in: | Course (compulsory, elective) |
| **-** | **Polish** | **elective** |
| Cycle of study: | Form of study (full-time,part-time) | |
| **First-cycle studies** | **part-time** | |
| No. of hours | | No. of credits |
| Lecture: **14** Classes: **10** Laboratory: **-** Project/seminars: **-** | | **4** |
| Status of the course in the study program (Basic, major, other) | (university-wide, from another field) | |
| **other** | **from field** | |
| Education areas and fields of science and art | | ECTS distribution (number and %) |
| **technical sciences** | | **4 100%** |

## Responsible for subject / lecturer:

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## Prerequisites in terms of knowledge, skills and social competencies:

| | | |
|---|---|---|
| 1 | **Knowledge** | Basic knowledge of materials science, machine construction, manufacturing techniques |
| 2 | **Skills** | Student has the ability to think logically, to use information obtained from literature and the Internet |
| 3 | **Social competencies** | A student understands the need to learn and acquire new knowledge |

## Assumptions and objectives of the course:

To familiarize with the basic issues concerning the design of technological processes of machine parts manufacturing and assembly

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

### Knowledge:

1. The student should list and describe basic material technologies and process design during the life of the machine - [K1A_W21]
2. Student Knows basic methods, techniques, tools that utilize the solving of simple engineering tasks in the field of construction and operation of forming, shaping, improving machines - [K1A_W24 ]

### Skills:

1. The student is able to characterize the technological machines in terms of construction, function and working parameters depending on the process of forming or shaping the product and from the technique used - [K1A_U05]
2. The student is able to select and apply materials and technologies of machine parts exposed to damage (traditional and unconventional materials) - [K1A_U17]
3. Can design the design and technology of simple parts and subassemblies of process machines used for production processes and to design the organization of production units of the first complexity - [K1A_U19]

### Social competencies:

1. Student is able to discuss the influence of vibrations on machine, product and operator, ecology of machines - [K1A_K08]
2. The student is aware that the creation of products that meet the needs of users requires a system approach in machine technology with technical, economic, marketing, legal, organizational and financial issues. - [K1A_K09]

## Assessment methods of study outcomes

Formative evaluation

a) in terms of exercise: based on the current progress of the exercise

b) lectures: too many lecture classes and limited time prevents any knowledge test procedure

Summary summary:

Lecture: Examination based on a written test consisting of 4 questions rated on a scale of 0 to 1. Credit for a minimum of 2.4 points.

Exercise: Pass on oral or written answers in the scope of each lab exercise, report on each laboratory exercise as instructed by the instructor. All exercises must be completed in order to pass the laboratory tests (positive feedback and report).

Exercise: Pass on oral or written answers from the content of each exercise, report on each exercise as instructed by the instructor. All exercises must be completed in order to pass the test (positive assessment of the answer and report).

## Course description

Lecture:

General introduction to machine technology. Phases of the existence of a technical object. The essence of machine technology. New tendencies in machine technology. Production process. Technological process. Technological documentation. Outputs for the design of the technological process. Semis. Technical standard of working time. Machining centers. Allowances. Processing accuracy, errors. Quality of the product. Outer layer and shaping factors. Technological tooling. Costs. Construction technology. Assembly. Design of technological processes of typical machine parts. Components of computer-aided design of technological processes.

Lecture with elements of discussion

exercises:

1 Axis-symmetrical workpiece technology (shaft, sleeve, disc)

2 finishing techniques

3 Technology of machining non-axisymmetric objects (body, lever, plate, bracket)

4 Robotized assembly technology

5 Technological process of cylindrical gear.

Lecture: information lecture in combination with conversational, case method

Exercise: exercise method, oxford method, round table, games, case method

## Basic bibliography:

1. Legutko S., Podstawy eksploatacji maszyn i urządzeń, WSiP, Warszawa, 2004

2. Białek M., Bacia A., Maszyny technologiczne w konwencjonalnej technologii formującej i kształtującej, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2002

3. Pająk E., Podstawy obróbki mechanicznej - materiały pomocnicze do wykładów i laboratoriów, Skrypt PWSZ Konin, 2007

4. Biały W., Podstawy maszynoznawstwa, PWE, Warszawa, 2016

## Additional bibliography:

1. Kołodziej A., Maszynoznawstwo, PWSZ w Kaliszu, Kalisz, 2008

2. Okoniewski S., Technologia maszyn, WSiP, Warszawa, 1999

3. Praca pod redakcją J. Erbla., Encyklopedia technik wytwarzania stosowanych w przemyśle maszynowym, tom I, tom II, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2001

4. Mały poradnik mechanika - tom 1 i 2, WNT, Warszawa, 2015

## Result of average student's workload

| Activity | Time (working hours) |
|---|---|
| 1. Lectures | 14 |
| 2. Exercises | 10 |
| 3. Preparation for exercises | 30 |
| 4. Student | 15 |
| 5. Consultation | 15 |
| 6. Test | 2 |

## Student's workload

| Source of workload | hours | ECTS |
|---|---|---|
| Total workload | 86 | 4 |

| | | |
|---|---|---|
| Contact hours | 41 | 2 |
| Practical activities | 10 | 1 |