



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Diploma seminar

### Course

Field of study

Mechanical and Automotive Engineering

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

4/7

Profile of study

general academic

Course offered in

Polish

Requirements

elective

### Number of hours

Lecture

0

Laboratory classes

0

Other (e.g. online)

0

Tutorials

0

Projects/seminars

30

### Number of credit points

15

### Lecturers

Responsible for the course/lecturer:

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Faculty of Civil and Transport Engineering

Piotrowo street 3, 60-965 Poznan

Responsible for the course/lecturer:

### Prerequisites

**KNOWLEDGE:** The graduate has a basic knowledge of the principles of conducting design and research work. He knows the importance of having adequate information in solving tasks.

**SKILLS:** The graduate student is able to search and integrate the obtained information, interpret it, draw conclusions, and use IT tools.

**SOCIAL COMPETENCES:** The graduate is aware of the importance and understands non-technical, especially formal and legal aspects and effects of the implementation of promotional engineering work.

### Course objective

The objective of the course is to familiarize graduates with the requirements for an engineering diploma



thesis. Students acquire the ability to present and interpret the results of literature studies and own research. Additionally, students are acquainted with the methodology and technique of writing an engineering diploma thesis.

### Course-related learning outcomes

#### Knowledge

Has knowledge in the field of mathematics, including algebra, analysis, theory of differential equations, probability, analytical geometry necessary to: describe the operation of discrete mechanical systems, understand computer graphics methods, describe the operation of electrical and mechatronic systems.

Has basic knowledge of the basics of machine design and the theory of machines and mechanisms, including mechanical vibrations.

Has basic knowledge of the methods of linear measurements, measurements of stresses, strains, velocities, temperatures and fluid streams, including measurements of these quantities by electrical means.

Has elementary knowledge of the impact of technology changes on the organization of social life as well as the health and psyche of individuals in human-machine contact.

Has elementary knowledge of the economics and economics of industrial enterprises, banking system, commercial law, and entrepreneurial accounting.

#### Skills

Can obtain information from literature, the Internet, databases and other sources. Can integrate the obtained information, interpret and draw conclusions from it, and create and justify opinions.

Can search in catalogs and on manufacturers' websites ready-made machine components to be used in his own projects.

Can use computer office packages for editing technical texts, including formulas and tables, technical and economic calculations using a spreadsheet and running a simple relational database.

Can use integrated with the packages for spatial modeling, programs for the calculation of mechanical structures by the finite element method and correctly interpret their results.

Can use learned mathematical theories to create and analyze simple mathematical models of machines and their elements, and simple technical systems.

Can apply basic technical standards regarding unification and safety and recycling.

Can perform elementary technical calculations in the field of fluid mechanics and thermodynamics, such as heat and mass balances, pressure losses in pipelines, select parameters of blowers and fans for ventilation and transport systems, and calculate thermodynamic courses in thermal machines.

Can perform strength calculations of simple frames and load-bearing structures of machines using elementary strength theories.



Can draw a diagram and a simple machine element by hand in accordance with the rules of technical drawing.

Social competences

Is ready to critically assess his knowledge and received content.

Is ready to recognize the importance of knowledge in solving cognitive and practical problems and to consult experts in case of difficulties in solving the problem on its own.

Is ready to fulfill social obligations and co-organize activities for the benefit of the social environment.

Is ready to initiate actions for the public interest.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Final credit, which is a grade resulting from partial marks for the speeches, the degree of realization of the diploma work, involvement in the speech, the form of preparation of the presentation, the quality of the selection of substantive information for the presented work, presence and active participation in the seminar, and the percentage of work advancement, confirmed by the promoter.

### Programme content

- Introduction and organization of the subject - a repetition of the formal, legal and methodological foundations for the preparation and realization of the engineering diploma thesis and setting the dates of individual speeches of graduates in accordance with the subject of the diploma thesis.
- Fundamentals of the methodology presentation, concerning the subject of engineering thesis - presentation of the subject of the diploma work, its genesis, the purpose, the tasks, the way of achieving the goal, and the scope in the form of a work plan, and literature related to the subject of engineering work (presentation in Power Point, used to a large extent for the preparation of the thesis for defense).
- Individual presentations of engineering thesis - individual speeches of graduates with presentations of the subject, genesis, goal and diploma work plan; discussion of the structure of the work and substantive issues of the work and own original contribution; comments and summary of students' speeches by the teacher.
- Presentation of the realization of the engineering thesis - individual reporting on the progress of diploma work, written in a text editor, containing graphic objects, and results of own engineering studies, testing, research, both completed activities and in progress. Reporting the obtained results and their interpretation, presentation of possible problems with the realization of the work; discussion.
- Summary of the stage of engineering thesis - summary of individual speeches graduate students related to the realization of engineering diploma works; discussion with current presenters and other seminar participants.



- Preparation for the defense of an engineering diploma work, reminding of formal requirements to work at the Faculty as well as documents and preparatory procedures for the defense of the diploma thesis; giving preliminary dates for the defence of engineering works.

### Teaching methods

1. Individual multimedia presentations of the graduates in Power-Point of the subject, genesis, goal and diploma work plan.
2. Individual multimedia presentations of graduates in a text editor (Word) of the progress of writing the diploma work.
3. Discussion on the speeches with the participation of graduate students and summary by the lecturer.

### Bibliography

#### Basic

1. Gambrelli G., Łucki Z.: Thesis / Praca dyplomowa. AGH University of Science and Technology Publishing House, Cracow, 2011 (in Polish).
2. Wojciechowska R.: Methodological guide for writing the thesis / Przewodnik metodyczny pisania pracy dyplomowej. DiFir SA Publishing House , 2010 (in Polish).
3. Knop Zb.: Methodology of writing thesis / Metodyka pisania prac magisterskich i dyplomowych. Poznan Publishing House, Poznan, 2009 (in Polish).
4. Majchrzak J., Mendel T.: Methodology of writing master's and diploma theses / Metodyka pisania prac magisterskich i dyplomowych. University of Economics in Poznań Publishing House , Poznań, 2009 (in Polish).
5. Sójka Z., Popow G., Zawal W.: Guidebook for thesis writing / Poradnik pisania prac dyplomowych. Baltic Higher Humanistic School Publishing House , Koszalin, 2006 (in Polish).

#### Additional

1. Leszek W.: Selected methodological issues of empirical research / Wybrane zagadnienia metodyczne badań empirycznych. ITE Edition, Radom, 2006 (in Polish).
2. Cempel C.: Modern issues of research methodology and philosophy / Nowoczesne zagadnienia metodologii i filozofii badań. Ed. ITE and PW, Radom-Warsaw, 2005 (in Polish).
3. Kwaśniewska K.: How to write thesis (practical tips) / Jak pisać prace dyplomowe (wskazówki praktyczne). Bydgoszcz, KPSW Publishing House, 2005 (in Polish).



### Breakdown of average student's workload

	Hours	ECTS
Total workload	375	15,0
Classes requiring direct contact with the teacher	30	3,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	345	12,0

<sup>1</sup> delete or add other activities as appropriate