

# Fundamentals of scientific research methodology - opis przedmiotu

| Informacje ogólne   |                                                 |
|---------------------|-------------------------------------------------|
| Nazwa przedmiotu    | Fundamentals of scientific research methodology |
| Kod przedmiotu      | 06.9-WM-ZiIP-ANG-D-10_20                        |
| Wydział             | <a href="#">Wydział Mechaniczny</a>             |
| Kierunek            | Management and Production Engineering           |
| Profil              | ogólnoakademicki                                |
| Rodzaj studiów      | drugiego stopnia z tyt. magistra inżyniera      |
| Semestr rozpoczęcia | semestr zimowy 2020/2021                        |

| Informacje o przedmiocie        |                                                                                          |
|---------------------------------|------------------------------------------------------------------------------------------|
| Semestr                         | 1                                                                                        |
| Liczba punktów ECTS do zdobycia | 2                                                                                        |
| Typ przedmiotu                  | obowiązkowy                                                                              |
| Język nauczania                 | angielski                                                                                |
| Sylabus opracował               | <ul style="list-style-type: none"><li>dr hab. Eunika Baron-Polańczyk, prof. UZ</li></ul> |

| Formy zajęć |                                            |                                           |                                               |                                              |                     |
|-------------|--------------------------------------------|-------------------------------------------|-----------------------------------------------|----------------------------------------------|---------------------|
| Forma zajęć | Liczba godzin w semestrze<br>(stacjonarne) | Liczba godzin w tygodniu<br>(stacjonarne) | Liczba godzin w semestrze<br>(niestacjonarne) | Liczba godzin w tygodniu<br>(niestacjonarne) | Forma zaliczenia    |
| Projekt     | 15                                         | 1                                         | 9                                             | 0,6                                          | Zaliczenie na ocenę |
| Wykład      | 15                                         | 1                                         | 9                                             | 0,6                                          | Zaliczenie na ocenę |

## Cel przedmiotu

The aim of the course is: to prepare the student to write his master's thesis, i.e. gain knowledge of the general methodological foundations of scientific research, research process, research methods and tools, methodics for preparing scientific work and practical skills in conducting research work and presenting its results.

## Wymagania wstępne

Diploma seminar, interim work.

## Zakres tematyczny

### Lecture:

W1. Requirements for a master thesis. Differences between engineering and master's thesis.

W2. Copyright and ethical problems.

W3. Types and role of sources of scientific information in creating scientific papers. Documenting sources.

W4. The technique of writing the master's thesis. Work structure.

W5. Editorial requirements and editing rules.

W6. Research process. Purpose of research. Hypothesis.

W7. Research methods used in the process of creating the MA thesis. Data collection methods.

W8. Methodology for preparing scientific work.

W9. Techniques of writing master's theses - development of the main material.

W10. Techniques of writing master's theses - charts, drawings, tables, lists.

W11. Research tools.

W12. Scientific observation.

W13. Experimental research.

W14. Forms of presentation of own research results.

W15. Criteria for the evaluation of the MA thesis. Diploma exam.

### Project:

P1-2. Choosing a topic and developing a final work plan.

P3-4. Selection of literature and documenting sources.

P5-7. Preparation of the final work.

P8-9. Consultation regarding final work.

P10-11. Correction of final work.

P12-13. Editorial work.

P14-15. Preparation of the final work presentation.

## Metody kształcenia

*Lecture:* informative and problem lecture, talk, slide-show, demonstration.

*Project:* practical exercises, methodical workshops, project method, problem discussion.

## Efekty uczenia się i metody weryfikacji osiągnięcia efektów uczenia się

| Opis efektu                                                                                                                                                                                                                                                                                                                                                                                                              | Symbole efektów                                                       | Metody weryfikacji                                                                                                                           | Forma zajęć                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| The student understands the basics, the techniques, the tools and the materials used for solving complex, production engineering tasks.                                                                                                                                                                                                                                                                                  | <ul style="list-style-type: none"><li><a href="#">K_W18</a></li></ul> | <ul style="list-style-type: none"><li>bieżąca kontrola na zajęciach</li></ul>                                                                | <ul style="list-style-type: none"><li>Wykład</li></ul>                 |
| The student has basic knowledge regarding the protection of industrial and intellectual properties and is also able to use patented information data.                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"><li><a href="#">K_W21</a></li></ul> | <ul style="list-style-type: none"><li>bieżąca kontrola na zajęciach</li><li>praca pisemna</li></ul>                                          | <ul style="list-style-type: none"><li>Wykład</li><li>Projekt</li></ul> |
| The student is able to prepare -and orally present- some selected issues, related to Management and Production Engineering in Polish and in a foreign language.                                                                                                                                                                                                                                                          | <ul style="list-style-type: none"><li><a href="#">K_U06</a></li></ul> | <ul style="list-style-type: none"><li>konspekt</li><li>obserwacja i ocena aktywności na zajęciach</li><li>praca pisemna</li></ul>            | <ul style="list-style-type: none"><li>Projekt</li></ul>                |
| The student is able to prepare, document in writing and elaborate issues in technical sciences and in the scientific disciplines relevant to Management and Production Engineering, viz., production engineering, the engineering of materials, the building and operating of machines, mechanics, automation and robotics, management, presenting the results of his/her research in writing, in Polish and in English. | <ul style="list-style-type: none"><li><a href="#">K_U05</a></li></ul> | <ul style="list-style-type: none"><li>konspekt</li><li>obserwacje i ocena umiejętności praktycznych studenta</li><li>praca pisemna</li></ul> | <ul style="list-style-type: none"><li>Projekt</li></ul>                |
| The student is able to prioritise and carry out his/her own tasks as well as the tasks of others.                                                                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"><li><a href="#">K_K04</a></li></ul> | <ul style="list-style-type: none"><li>bieżąca kontrola na zajęciach</li><li>przygotowanie projektu</li></ul>                                 | <ul style="list-style-type: none"><li>Projekt</li></ul>                |
| The student is able to formulate and test hypotheses, related to engineering problems and simple research problems, related to Management and Production Engineering.                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"><li><a href="#">K_U19</a></li></ul> | <ul style="list-style-type: none"><li>konspekt</li><li>obserwacje i ocena umiejętności praktycznych studenta</li><li>praca pisemna</li></ul> | <ul style="list-style-type: none"><li>Projekt</li></ul>                |
| The student is able to obtain information from literature, databases and other sources and is able to integrate, interpret and critically evaluate it, as well as draw conclusions, therefrom, both formulating it and sufficiently justify opinions on it.                                                                                                                                                              | <ul style="list-style-type: none"><li><a href="#">K_U01</a></li></ul> | <ul style="list-style-type: none"><li>konspekt</li><li>obserwacje i ocena umiejętności praktycznych studenta</li><li>praca pisemna</li></ul> | <ul style="list-style-type: none"><li>Projekt</li></ul>                |

## Warunki zaliczenia

*Lecture:* credit with grade - according to a written test (min. 51% for passing the grade) and ongoing checking / grading of messages during classes.

*Project:* credit with grade - (classes of a practical, practical nature) takes place on the basis of projects / outlines / written works and activity during classes.

*Final grade:* the final grade is determined on the basis of the arithmetic average of the grades for the project and lecture with the same weight (50% lecture, 50% project).

## Literatura podstawowa

1. John W. Creswell, J. David Creswell, Research Design: Qualitative, Quantitative, and Mixed Methods, Fifth Edition, Sage Publications, Los Angeles 2018.
2. Wayne C. Booth, Gregory G. Colomb, and Joseph M. Williams, The Craft of Research, Fourth Edition, The University of Chicago Press, Chicago 2016.
3. Geoffrey R. Marczyk, David DeMatteo, David Festinger, Essentials of Research Design and Methodology, John Wiley & Sons Inc., Hoboken 2005.
4. Sharan B. Merriam, Elizabeth J. Tisdell, Qualitative Research: A Guide to Design and Implementation, Fourth Edition, Jossey Bass A Wiley Brand, San Francisco, 2016.
5. Mark Balnaves, Peter Caputi, Introduction to Quantitative Research Methods, Sage Publications Ltd, London, United Kingdom, 2001.

## Literatura uzupełniająca

1. Earl R. Babbie, The Practice of Social Research, 14th Edition, Cengage Learning, Boston, MA 02210, USA, 2016.
2. Ranjit Kumar, Research Methodology: A Step-by-Step Guide for Beginners, Fifth Edition, Sage Publications Ltd, London, United Kingdom, 2019.

## Uwagi

Zmodyfikowane przez dr hab. Eunika Baron-Polańczyk, prof. UZ (ostatnia modyfikacja: 26-04-2020 19:54)

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