# MODULE DESCRIPTION

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|---|---|---|
| Module code | full-time studies: | **Z-ZIP1-E-703a** |
| | part-time studies: | **Z-ZIPN1-E-703b** |
| Module name | **Resource Management and Cleaner Production** | |
| Module name in Polish | **Zarządzanie zasobami i czystsza produkcja** | |
| Valid from academic year | **2019/2020** | |

## MODULE PLACEMENT IN THE SYLLABUS

| | |
|---|---|
| Field of study | **MANAGEMENT AND PRODUCTION ENGINEERING** |
| Level of education | **1st degree** |
| Studies profile | **General** |
| Form and method of conducting classes | **Full-time and Part-time** |
| Specialisation | **All** |
| Unit conducting the module | **Department of Production Engineering** |
| Module co-ordinator | **Magdalena Rybaczewska-Błażejowska, PhD, DSc** |
| Approved by: | |

## MODULE OVERVIEW

| | |
|---|---|
| Type of subject / group of subjects | **Major** |
| Module status | **Non-compulsory** |
| Language of conducting classes | **English** |
| Module placement in the syllabus - semester | **Semester VII** |
| Initial requirements | **No requirements** |
| Examination (YES/NO) | **NO** |
| Number of ECTS credit points | **1** |

| **Method of conducting classes** | | **Lecture** | **Classes** | **Laboratory** | **Project** | **Other** |
|---|---|---|---|---|---|---|
| **Per semester** | full-time studies: | **15** | | | | |
| | part-time studies: | **9** | | | | |

## TEACHING RESULTS AND THE METHODS OF ASSESSING TEACHING RESULTS

| Category | Symbol | Learning outcomes | Assignations to the directional learning outcomes |
|---|---|---|---|
| Knowledge | W01 | A student knows and understands the importance of laws and strategies governing environmental protection and the circular economy in business management. | ZIP1_W15 |
| | W02 | Has a basic knowledge of development trends in environmental management in relation to production processes, including eco-innovative activities. | ZIP1_W18 |
| Social competences | K01 | He understands the connection between engineering activities and the impact on the environment and is able to act with respect to social needs and the laws governing the natural environment. | ZIP1_K02<br>ZIP1_K05 |

## TEACHING CONTENTS

| Method of conducting classes | Teaching contents |
|---|---|
| Lecture | Fundamental aspects of environmental protection and resource management. Development of pollution prevention methods.<br>Industrial impacts on the environment, including the consumption of natural resources.<br>Definition and principles of the cleaner production concept.<br>Methods and tools supporting the assessment and implementation of cleaner production in enterprises.<br>Cleaner production case studies. Best practices for selected industries. |

## METODS OF ASSESSING TEACHING RESULTS

| Symbol | Methods of checking the learning outcomes *(select X)* | | | | | |
|---|---|---|---|---|---|---|
| | Oral exam | Written exam | Test | Project | Statement | Other |
| W01 | | | X | | | |
| W02 | | | X | | | |
| K01 | | | X | | | |

## FORM AND CONDITIONS OF PASSING

| Form of classes | Form of credit | Passing conditions |
|---|---|---|
| Lecture | Credit with grade | Obtaining at least 51% of the points on the final test. |

## STUDENT WORKLOAD

| Balance of ECTS points | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Type of student's activity | Student's workload | | | | | | | | | | Unit |
| | | full-time | | | | | part-time | | | | | |
| 1. | Participation in the activities | Lc | C | Lb | P | O | Lc | C | Lb | P | O | h |
| | | 15 | | | | | 9 | | | | | |
| 2. | Other (consultation, exam) | 2 | | | | | 2 | | | | | h |
| 3. | **Number of hours of a student's assisted work** | **17** | | | | | **11** | | | | | h |
| 4. | **Number of ECTS credit points which are allocated for assisted work** | **0,7** | | | | | **0,4** | | | | | ECTS |
| 5. | **Number of hours of a student's unassisted work** | **8** | | | | | **14** | | | | | h |
| 6. | **Number of ECTS credit points which a student receives for unassisted work** | **0,3** | | | | | **0,6** | | | | | ECTS |
| 7. | **Work input connected with practical classes** | **0** | | | | | **0** | | | | | h |
| 8. | **Number of ECTS credit points which a student receives for practical classes** | **0,0** | | | | | **0,0** | | | | | ECTS |
| 9. | **Total number of hours of a student's work** | **25** | | | | | **25** | | | | | h |
| 10. | **Punkty ECTS za moduł** *1 ECTS=25 hours* | **1** | | | | | | | | | | ECTS |

## LITERATURE


1. Dandira-Chibaya S.V. (2013), *Design of a Cleaner Production Framework to Enhance Productivity*, LAP LAMBERT Academic Publishing.
2. Burke G., Singh B. R., Theodore L. (2004), *Handbook of Environmental Management and Technology*, *Wiley.*
3. Nilsson L., Persson P.O., Ryden L., Darozhka S., Zaliauskiene A. (2007), Cleaner Production: Technologies and Tools for Resource Efficient Production, The Baltic University Press, Uppsala.
4. Rybaczewska-Błażejowska M. (2019), *Eco-innovation and eco-efficiency in the frame of life cycle assessment,* Wydawnictwo Politechniki Świętokrzyskiej, Kielce.
5. Schmidt M., Onyango V., Palekhov D. (2011), *Implementing Environmental and Resource Management*, Springer-Verlag Berlin.