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| **Course code** |  |
| **Type and description** | EC – Elective Course |
| **ECTS credit** | 1 |
| **Course name** | Materials in 3D printing technologies |
| **Course name in Polish** | Materiały w technologii druku 3D |
| **Language of instruction** | English |
| **Course level** | 8 PRK |
| **Course coordinator**  | Prof. dr hab. inż. Jacek Sawicki |
| **Course instructors** | Dr inż. Paulina Byczkowska  |
| **Delivery methods and course duration** |

|  | **Lecture** | **Tutorials** | **Laboratory** | **Project** | **Seminar** | **Other** | **Total of teaching hours during semester** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Contact hours | 0 | 0 | 0 | 15 | 0 | 0 | 15 |
| E-learning | no | no | no | no | no | no | no |
| Assessment criteria (weightage) | 0 | 0 | 0 | 100% | 0 | 0 | 100% |

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| **Course objective** | The aim of the course is to enable the 3D printing technology. Materials used for printing. Operation of equipment and software used to prepare models for 3D printing. |
| **Learning outcomes** | PhD student after completing the course: * will be able to identify and describe basic 3D printing technologies.
* will be able to select a suitable material for the printed part in the technologies studied
* will be able to prepare the printer for operation and carry out the 3D printing process.
* is able to prepare a model for 3D printing using the known slicers.
* is able to carry out post-processing of the printed component.

W4, U4, K1 |
| **Assessment methods** | Methods of verification of learning outcomeseffect - presentation of the projectThe final grade consists of:Presentation - 100% |
| **Prerequisites** |  |
| **Course content with delivery methods** | Learning content - project1. 3D PRINTING FROM PLASTIC - introduction to FDM / FFF technology , Overview of materials for 3D printing
2. 3D PRINTING FROM RESIN - introduction to SLA / UV LCD technology Overview of 3D printing materials PolyJet technology
3. 3D PRINTING FROM METAL - introduction to SLM, Metal Binder Jetting and related technologies, DMLS Overview of materials for 3D printing
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| **Basic reference materials** | 1. “Podstawy druku 3D z Josefem Prusą” - Ondřej Stříteský , Wydanie pierwsze, Praga 2020 - ebo-ok do pobrania ze strony
2. “Additive Manufacturing Handbook: Product Development for the Defense Industry” - Adedeji B. Badiru, Vhance V. Valencia, David Liu - Technology & Engineering – 2017
3. “The 3D Printing Handbook. Technologies, design and applications” Hardcover – 2017
4. “Additive Manufacturing Technologies” Ian Gibson, David Rosen, Brent Stucker, Mahyar Khorasani, Springer Nature, 2020, ISBN, 3030561275, 9783030561277
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| **Other reference materials** | [**https://centrumdruku3d.pl/**](https://centrumdruku3d.pl/) |
| **Average student workload outside classroom** | 15 |
| **Comments** |  |
| **Last update** | March 2023 |