<table>
<tr><td>Course code</td><td></td></tr>
<tr><td>Type and description</td><td>EC</td></tr>
<tr><td>ECTS credit</td><td>1</td></tr>
<tr><td>Course name</td><td>Advanced Manufacturing</td></tr>
<tr><td>Course name in Polish</td><td>Zaawansowane Techniki Wytwarzania</td></tr>
<tr><td>Language of instruction</td><td>English</td></tr>
<tr><td>Course level</td><td>8 PRK</td></tr>
<tr><td>Course coordinator</td><td>Ph.D. D.Sc. Bogusław Pisarek, prof. LUT,</td></tr>
<tr><td>Course instructors</td><td>Ph.D. D.Sc. Bogusław Pisarek, associate prof., Ph.D. D.Sc. Paweł Leżański, D.Sc. Piotr Zgórniak</td></tr>
<tr><td>Delivery methods and course duration</td><td>
<table>
<tr><th></th><th>Lecture</th><th>Tutorials</th><th>Laboratory</th><th>Project</th><th>Seminar</th><th>Other</th><th>Total of teaching hours during semester</th></tr>
<tr><td>Contact hours</td><td></td><td></td><td></td><td>15</td><td></td><td></td><td>15</td></tr>
<tr><td>E-learning</td><td>No</td><td>No</td><td>No</td><td>No</td><td>No</td><td>No</td><td></td></tr>
<tr><td>Assessment criteria (weightage)</td><td></td><td></td><td></td><td>1</td><td></td><td></td><td></td></tr>
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<tr><td>Course objective</td><td>1. The course aims to enable the acquisition of knowledge, skills and competencies in selecting methodology, implementing and evaluating scientific research related to advanced casting techniques and methods of machining - the shaping of engineering materials.<br><br>2. The aim of the course is to familiarize PhD students with cutting tools and process condition monitoring.</td></tr>
<tr><td>Learning outcomes</td><td>A PhD student, after completing the course, can:<br><br>1. select and apply research methodology adequate for advanced casting technology or advanced loss technology of shaping engineering materials - effects W4, U4, K1,<br>2. use computer systems supporting the design of products for advanced casting techniques - effects W4, U4, K1,<br>3. evaluate and choose the proper casting technique depending on the requirements for the product and serial production - effects W4, U4, K1,<br>4. interpret and evaluate the impact of machining conditions on the condition of the surface layer of the treated surfaces - effects W4, U4, K1,<br>5. can describe and apply to measure systems in the diagnostics of the tool and cutting process, - effects W4, U4, K1,<br>6. carry out a critical assessment and analysis of scientific achievements with modern technologies of casting or machining - shaping of materials - effects W4, U4, K1.</td></tr>
<tr><td>Assessment methods</td><td>Verification methods of learning outcomes:: effects W4, U4, K1 – project<br><br>The final grade consists of:<br><br>the grade of the project – 100%</td></tr>
<tr><td>Prerequisites</td><td></td></tr>
<tr><td>Course content with delivery methods</td><td>PROJECT<br>1. Optimization of the casting construction as a function of the requirements of advanced techniques for manufacturing cast or 3D-printed metal products.</td></tr>
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|---|---|
| | 2. Analysis of surface roughness in machining processes.<br>3. The surveillance system of the selected machining process to detect undesirable process states and control its progress. |
| **Basic reference materials** | 1. Mahi Sahoo, Ph.D., Sudhari "Sam" Sahu, Ph.D: Principles of Metal Casting, Third Edition, 2014, Publisher: McGraw-Hill Education: New York, ISBN: 9780071789752.<br>2. Grzesik W., 2016. Advanced Machining Processes of Metallic Materials: Theory, Modelling and Applications. 2nd Edition. Elsevier.<br>3. Davim J.P. (ed.), 2010. Surface Integrity in Machining. Springer.<br>4. Teti R., Jemielniak K., O'Donnell G., Dornfeld D., 2010. Advanced monitoring of machining operations. CIRP Annals - Manufacturing Technology, vol. 59/2, pp. 717-739. |
| **Other reference materials** | 1. Campbell, J.: Complete Casting Handbook, 2011. Published by Elsevier Ltd.<br>2. Groover, M.P., 2008. Automation, Production Systems, and Computer-Integrated Manufacturing. Prentice Hall Int. Edition, 2008.<br>3. Kruszyński B., 2001. Surface integrity in grinding. A Series of Monographs, The Technical University Press, Łódź, Poland.<br>4. Groover M.P., 2010. Fundamentals of Modern Manufacturing: Materials, Processes and Systems. 4th edition. John Wiley &Sons, Inc., USA. |
| **Average student workload outside classroom** | 10h |
| **Comments** | |
| **Last update** | 17 March 2023 |