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| Course name | Methods of protection and preservation of raw materials and food products | |
| Course code | E.1.MPPR.SC.ECTIE.A | |
| Department | Institute of Machinery Management, Ergonomics and Production Processes | |
| Faculty | Faculty of Production and Power Engineering | |
| Course supervisor/Lecturer | Dr. hab. Barbara Krzysztofik, prof. UR; dr inż. Paulina Wrona | |
| General information | Teaching period | Winter and summer semester |
| | ECTS credit | 6 |
| | Lectures total | 40 |
| | Practicals | 10 |
| | Project | 10 |
| Objective and general description | The aim of the course is to acquaint students with the basics methods of securing raw materials and food products using traditional methods, commonly known and used since the beginning of human history, and modern methods. | |
| Lectures – 40h | <p>Terms of foodstuff, The effect of processing on the nutritional properties of food – 3h</p> <p>The objectives of preservation of raw materials and food products, Factors affecting the stability of raw materials and products – 3h</p> <p>Methods of food preservation:</p> <p>Physical methods, Thermal methods, The protective gases – 4h</p> <p>Lowering the water activity, Chemical methods – 5h</p> <p>Fixing by means of chemical preservatives, Fixation with organic acids, Fixing by means of inorganic acids – 3h</p> <p>Smoking, curing – 2h</p> <p>Unconventional methods of food preservation:</p> <p>Ionizing radiation, Nuclear radiation, Ultraviolet – 2h</p> <p>Sound vibration and supersonic, The pulsating magnetic field – 2h</p> <p>The pulsating electrical field, Pulsating light, High pressure – 2h</p> <p>Pulsed microwave field, The use of antibiotics, Aseptic packaging technology – 2h</p> <p>Heat resistance, Filtration, Spin, Fixing agents less aggressive or neutral – 2h</p> <p>Intelligent packaging – 10h</p> | |
| Practicals – 10h | Practical application of selected techniques for food security -10h | |
| Project – 10h | Implementation of the following projects: Description and design process, the selection of methods of securing, packaging and parameters – 10h | |
| Assessment method | The material of instruction will be included based on an oral examination or written. Exercises performed practically by students The projects will prepare a written and electronic form will constitute the | |

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| | basis for the completion of the project |
| References | <ol style="list-style-type: none"> 1. Christian J. (2000). <i>Drying and Reduction of Water Activity, in The microbial safety and quality of food</i>, Lund B.M, Baird-Parker T.C., Gould G.W.(eds.), Aspen Publishers, 146-175. 2. Cohen J.S., Yang T.C.S., (1995). <i>Progress in food dehydration</i>. Trends in Food Science & Technology, 6, 20–25. 3. Drużkowski M., Pietrzyk S. (2006). <i>Nowoczesne metody utrwalania żywności</i>. Laboratorium., (8-9): 32 4. Drzewińska E., <i>Opakowania aktywne i inteligentne</i>, „Przegląd Papierniczy” 2010, 8. 5. Krzysztofik B. i in. (2015.) <i>Metody zabezpieczania i utrwalania surowców oraz produktów żywnościowych - studium przypadku – monografia IR</i> |