



Subject card

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|---|---|--|---|-------------------------------------|--|------------|-----|
| Subject name and code | Integrated Decision Systems, PG_00047701 | | | | | | |
| Field of study | Automatic Control, Cybernetics and Robotics | | | | | | |
| Date of commencement of studies | October 2021 | Academic year of realisation of subject | | | 2023/2024 | | |
| Education level | first-cycle studies | Subject group | | | Optional subject group Subject group related to scientific research in the field of study | | |
| Mode of study | Full-time studies | Mode of delivery | | | at the university | | |
| Year of study | 3 | Language of instruction | | | Polish | | |
| Semester of study | 6 | ECTS credits | | | 2.0 | | |
| Learning profile | general academic profile | Assessment form | | | assessment | | |
| Conducting unit | Department of Decision Systems and Robotics -> Faculty of Electronics, Telecommunications and Informatics | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | | dr inż. Michał Czubenko | | | | |
| | Teachers | | dr inż. Michał Czubenko | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 0.0 | 0.0 | 0.0 | 0.0 | 15.0 | 15 |
| | E-learning hours included: 0.0 | | | | | | |
| Learning activity and number of study hours | Learning activity | Participation in didactic classes included in study plan | | Participation in consultation hours | | Self-study | SUM |
| | Number of study hours | 15 | | 2.0 | | 33.0 | 50 |
| Subject objectives | The aim of the course is to enable students to independently perform a large system project. The projects are closely related to the fusion of various kinds of measurement data and making decisions based on them. Student groups consist of approximately 8 people. Leader of the group is responsible for the division of labor and group management. Programming code (for different devices) is stored in a control version system. | | | | | | |
| Learning outcomes | Course outcome | | Subject outcome | | Method of verification | | |
| | [K6_U03] can design, according to required specifications, and make a simple device, facility, system or carry out a process, specific to the field of study, using suitable methods, techniques, tools and materials, following engineering standards and norms, applying technologies specific to the field of study and experience gained in the professional engineering environment | | The student develops the ability to design integrated systems that make decisions. In particular, it can combine vision systems with control systems, as well as with AVR and VR. | | [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task | | |
| | [K6_U08] while identifying and formulating specifications of engineering tasks related to the field of study and solving these tasks, can:n- apply analytical, simulation and experimental methods,n- notice their systemic and non-technical aspects,n- make a preliminary economic assessment of suggested solutions and engineering work n | | The student combines the skills of data analysis and design decision systems. and effectively develops knowledge of high-level programming languages. | | [SU1] Assessment of task fulfilment | | |
| Subject contents | The course will discussed control version systems and methods of their use, how to manage medium ICT project. | | | | | | |

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| Prerequisites and co-requisites | <ul style="list-style-type: none">• Programming languages such as C, C ++, Python, C #.• Knowledge of the signal processing.• Knowledge of sensors and transducers.• Knowledge of embedded system design. | | |
| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
| | Project | 60.0% | 30.0% |
| | Leader | 60.0% | 20.0% |
| | Group | 60.0% | 50.0% |
| Recommended reading | Basic literature | Siegwart, R., Nourbakhsh, I. R., & Scaramuzza, D. (2011). <i>Introduction to autonomous mobile robots</i> . MIT press. | |
| | Supplementary literature | Kerzner, Harold. <i>Advanced project management: edycja polska</i> . Ed. Paweł Dąbrowski. Helion, 2005. Liggins II, Martin, David Hall, and James Llinas, eds. <i>Handbook of multisensor data fusion: theory and practice</i> . CRC press, 2017. | |
| | eResources addresses | Adresy na platformie eNauczanie: | |
| | Example issues/ example questions/ tasks being completed | <ul style="list-style-type: none">• Street View of WETI corridor using a mobile robot• Solving the problem of rendez-vous in a virtual environment• Integration of sensory data for scheduling trains• Construction and control mobile robot follower for tag• Construction and control of a mobile robot mapping environment | |
| Work placement | Not applicable | | |