

PROGRAMMING OF ROBOTIC SYSTEMS

Тип (статус) дисципліни	Вибіркова загальної підготовки
Освітній рівень	Перший (бакалаврський)
Мова викладання	Англійська
Семестр	
Кількість призначених кредитів ЄКТС	8.00
Форми навчання, для яких викладається дисципліна	Очна (денна)

Результати навчання. A student who has successfully completed the discipline must: master the basics of programming robotic systems LEGO MINDSTORMS, ARDUINO, UBTECH, compose algorithms and program them using different languages and programming environments; model, design and develop algorithms, evaluate their complexity; plan and effectively organize the work of compiling programs.

Зміст навчальної дисципліни. Fundamentals of algorithmization for robotic systems LEGO MINDSTORMS, ARDUINO, UBTECH; programming of servo motors, DC motors, and sensors (ultrasonic, touch, light, and gyroscope); fundamentals of programming of robotic systems LEGO MINDSTORMS and ARDUINO; development of control algorithms and robotic mechanisms; sensor data processing; algorithms and problem solving in autonomous robotic systems.

Запланована аудиторна робота: The minimum number of classroom hours per one ECTS credit for an academic discipline at the first (bachelor's) level of higher education in full-time study is 10 hours per one ECTS credit.

Форми (методи) навчання: lectures (using visualization methods, problem-based and interactive learning, motivational techniques, and information and communication technologies); laboratory classes (using computer modeling methods, project-based activities, training exercises, analysis of problem-based and scientific situations, explanation, discussion, etc.); independent work (studying theoretical material, preparing for the performance and defense of laboratory work, current and final assessment) using information and computer technologies and distance learning technologies.

Форми оцінювання результатів навчання: assessment of the control work and laboratory works; testing.

Вид семестрового контролю: pass/fail test

Навчальні ресурси:

1. Arduino Workshop, 2nd Edition: A Hands-On Introduction with 65 Projects – Boxall J. Arduino Workshop: A Hands-On Introduction with 65 Projects. 2nd Edition. – No Starch Press, 2021. – 432 p.
2. Foundations of Robotics: A Multidisciplinary Approach with Python and ROS — Herath D., St-Onge D. (Eds.). – Springer Singapore, 2022. – 543 p.
3. Modular learning environment MOODLE. Access to the resource: <https://msn.khmnu.edu.ua>
4. Electronic library of the university. Access to the resource: http://lib.khmnu.edu.ua/asp/php_f/p1age_lib.php

Викладач: канд. техн. наук, доцент Нічепорук А.О.