### **PROGRAMMING OF MICROCONTROLLER SYSTEMS**

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| **Тип дисципліни** | Elective |
| **Рівень вищої освіти** | First (Bachelor) |
| **Мова викладання** | English |
| **Кількість кредитів ЄКТС** | 8,0 |
| **Форми здобуття освіти** | Full-time |

**Результати навчання.** A student who has successfully completed the discipline must: skillfully use the principles of programming microcontrollers and microcontroller systems; design the architecture of microcontrollers for different types of purpose; analyze electrical circuits of electronic devices and devices; to compile algorithms for diagnosing microcontrollers and microcontroller systems; develop software and hardware for data exchange between the microcontroller and external devices; to implement all the knowledge and skills acquired during the study of the program in microcontroller programming languages (VHDL and C).

**Зміст навчальної дисципліни.** Modern directions of development of microprocessor technology. General information about microcontrollers. Structure and principle of operation of microcontrollers. Comparison of RISK and CISK technologies. ST7 microelectronics family of ST7 microcontrollers. Familiarity with the Arduino and Raspberry Pi platforms. Development environment and programming language of Arduino and Raspberry Pi microcontrollers. Basic structure of the program. Syntax and operators.

**Запланована навчальна діяльність**: number of classroom hours - not less than 1/3 of the total number of hours planned for the study of the discipline.

**Методи навчання:** lectures (using methods of problem-based learning and visualization); laboratory and practical classes (using trainings, master classes, workshops), independent work (individual tasks).

**Форми оцінювання результатів навчання**: oral examination, defense of laboratory and practical work, test control.

**Форма семестрового контролю:** credit.

**Навчальні ресурси:**

1. Modular learning environment MOODLE. Access to the resource: <https://msn.khmnu.edu.ua>
2. Electronic library of the university. Access to the resource: <http://lib.khmnu.edu.ua/asp/php_f/p1age_lib.php>

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