Syllabus Form of Academic Discipline
Development of Microprocessor Devices for a Smart Home

№	Field name	Detailed content, comments
1.	Name of the faculty	All the faculties
2.	The level of higher education	Bachelor's
3.	Code and title of specialty	All the specialties
4.	The type and title of the educational program	Educational Program
5.	Code and title of the discipline	Development of Microprocessor Devices for a Smart Home
6.	Number of ECTS credits	3
7.	The structure of the course (distribution by type and hours of training)	3 ECTS credits: 18 h. – 9 lecture, 12 h. – 6 practical lessons, 6 h. – 3 consultations, 60 h. – independent work, type of control: test.
8.	Schedule (terms) of study of the subject	3 Course, 6 semester of study (2 Course, 4 semester of study, for a shortened form of study); 4 Course, 7 semester of study (3 Course, 5 semester of study, for a shortened form of study); 4 Course, 8 semester of study (3 Course, 6 semester of study, for a shortened form of study).
9.	Prerequisites for learning the discipline	Disciplines that must be studied before: «Algorithm and Programming»
10.	Abstract (content) of the discipline	Elective discipline of basic (professional) training, the following content modules: General characteristics of smart home devices and systems, Raspberry PI programming. Development of graphic and web applications.
11.	Competencies, knowledge, skills, understanding that a higher education acquirer has in the learning process	- know the principles of operation of basic smart home systems, characteristics of sensors, data transmission protocols, existing analogues, basics of Python language for development of smart home management applications, basic libraries for executive device control, sensor polling, graphical interface implementation, smart home remote control methods via cloud servers and local web-server; - be able to control the on and off of lighting, as well as light intensity, implement space heating control systems with graphical and web-interface, implement smart home control through a cloud server using MQTT protocol and android application, process images from a video camera.
12.	Learning outcomes of a Higher Education applicant	- to develop software for smart home subsystems: heating, lighting, security; - to implement remote access to the management of smart home systems using the Web interface or mobile applications; - program a single-board Raspberry PI PC.
13.	Assessment system in accordance with each task for taking tests/exams	To get a positive grade from PPMP, students must master two main sections of this course: general characteristics of devices and systems of the smart home, Raspberry PI programming, development of graphics and web

		applications. Students must complete and defend laboratory work and practical classes. The credit is assessed by a rating, which is defined as the number of points obtained by the student during the semester on a 100-point scale.
14.	The quality of the educational process	Adherence to the principles of academic integrity http://lib.nure.ua/plagiat, https://nure.ua/branch/akademichna-dobrochesnist-ta-zabezpechennja-jakosti-osviti. Development of the working program of the discipline - 2020. The laboratory workshop is equipped with modern single-board PCs Raspberry PI 3, Raspberry PI 4 and uses modern software: Thonny, Bluefish.
15.	Methodological support	Complex of educational and methodical support of educational discipline "Development of microprocessor devices of a smart home" for students of all forms of education: 122 - "Computer Science" (ITSHI) / [Electronic resource] Edited by: O.V. Zubkov . - Electronic edition. - Kharkiv: KNURE, 2020. - 427 p.
16.	The developer of the Syllabus	Zubkov Oleh, Assosiate Professor of the Department of MTS, Candidate of Technical Sciences, Associate Professor, oleh.zubkov@nure.ua