

Syllabus form of Academic Discipline

Radio network technologies in embedded systems

№	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 specialities
4.	The type and title of the educational program	Educational Program
5.	Title of the discipline	Radio network technologies in embedded system (RNTES)
6.	Number of ECTS credits	4
7.	The structure of the course (distribution by type and hours of training)	4 ECTS credits: 32 h. – 16 lecture, 32 h. – 8 laboratory works, 8 h. – 4 consultations, 64 h. – independent work, type of control: exam
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: Higher Mathematics, Programming, Basics of Circuitry, Designing devices on microcontrollers and FPGAs. Modeling of digital signals by means of MATLAB and VHDL, Designing devices on microcontrollers and FPGAs. Microcontrollers
10.	Abstract (content) of the discipline	The optional discipline of basic (professional) training, contains the following content modules: - network technologies supported by STM32 products; - Bluetooth technology; - IEEE802.15.4, ZigBee technologies; - LoRa, LoRaWAN technologies; - connection of typical sensors with a serial and parallel interface.
11.	Competencies, knowledge, skills, understanding that a higher education acquirer has in the learning process	- the ability to carry out computer modeling of devices, systems and processes using universal packages of application programs; - the ability to use systems of modeling and automation of circuit design for the development of elements, nodes, blocks of radio engineering and telecommunication systems; - the ability to apply knowledge in the field of informatics and modern information technologies, computing and microprocessor technology and programming, software tools for solving specialized tasks and practical problems in the field of professional activity.
12.	Learning outcomes of a Higher Education applicant	- master the methods of system decomposition, which are implemented by hardware and software; - draw up structural and functional diagrams of the distributed system, localize connections and distribute functions among the nodes of the system according to the hierarchy; - develop schematic diagrams and write software for standard nodes and devices;

		<ul style="list-style-type: none"> - debug software using STM32CubeMX and STM32CubeIDE simulation packages; - program the microprocessor and debug the system as a whole
13.	Assessment system in accordance with each task for taking tests/exams	<p>In order to receive a positive grade from the RNTES, students must master all sections of this course.</p> <p>Students must complete and defend laboratory work.</p> <p>Credit is evaluated by a rating, which is defined as the number of points received by the student during the semester on a 100-point scale.</p> <p>Computer-based testing is provided</p>
14.	The quality of the educational process	<p>Adherence to the principles of academic integrity http://lib.nure.ua/plagiat, https://nure.ua/branch/akademichna-dobrochesnist-ta-zabezpechennja-jakosti-osviti.</p> <p>The laboratory practicum is equipped with modern laboratory models of the ST company that allow studying network technologies, in particular in radio networks. Modern ST software is used.</p> <p>The laboratory workshop is provided with modern laboratory layouts of the ST firm, which support network technologies and use modern software: MatLab, STM32CubeMX, STM32CubeIDE.</p>
15.	Methodological support	<p>Complex of educational and methodical support of educational discipline «Radio network technologies in embedded system» for students of all forms of all the specialties / [Electronic resource]</p> <p>Authors.: I. Svyd, , O. Vorgul, O. Zubkov. – Kharkiv, 2021. – 120 p.</p>
16.	The developer of the Syllabus	<p>Vorgul Oleksander, Associate Professor of the Department of MTS, Candidate of Technical Sciences, Associate Professor oleksandr.vorgul@nure.ua</p> <p>Svyd Iryna, Head of Department of MTS, Candidate of Technical Sciences, Associate Professor iryna.svyd@nure.ua</p> <p>Zubkov Oleh, Associate Professor of the Department of MTS, Candidate of Technical Sciences, Associate Professor oleh.zubkov@nure.ua</p>