South Ural State University (Chelyabinsk, Russia)
School of Electronic Engineering and Computer Science

Bachelor's Programme in Information and Communication Technology

Major: Communication Technologies and Intelligent Data Processing

Within "Communication Technologies and Intelligent Data Processing" bachelor programme you would learn key aspects of the Info-Communication Technologies and Communication Systems, including fundamentals of programming and software development, electronic circuits, radio electronic equipment technologies, Internet of Things technologies, Mobile Networks and communication systems, methods of Data Mining and Artificial Intelligence.

Terabytes of data are generated, transmitted, processed and stored every second. It fundamentally transforms the life around us today. "Industry 4.0", "Deep Learning", "Data Mining", "Artificial Intelligence", "Internet of Things" are the concepts that are changing the world around us now. In this regard, companies around the world are experiencing a staff shortage in professionals who are ready to solve the problems of effective information collection, transmission and processing. Within the framework of the **Communication technologies and Intelligent Data Processing** bachelor programme students would study the key aspects of methods and technologies for processing, distribution, transmission and storage of information, including:

- Fundamentals of Mathematics and Physics
- Programming and Software Development Processes
- Theory of Communication
- Fundamentals of Electronics and Internet of Things
- Data Storage and Processing Systems
- Machine Learning and Intelligent data analysis
- Industrial applications of sensing, data transmission and processing

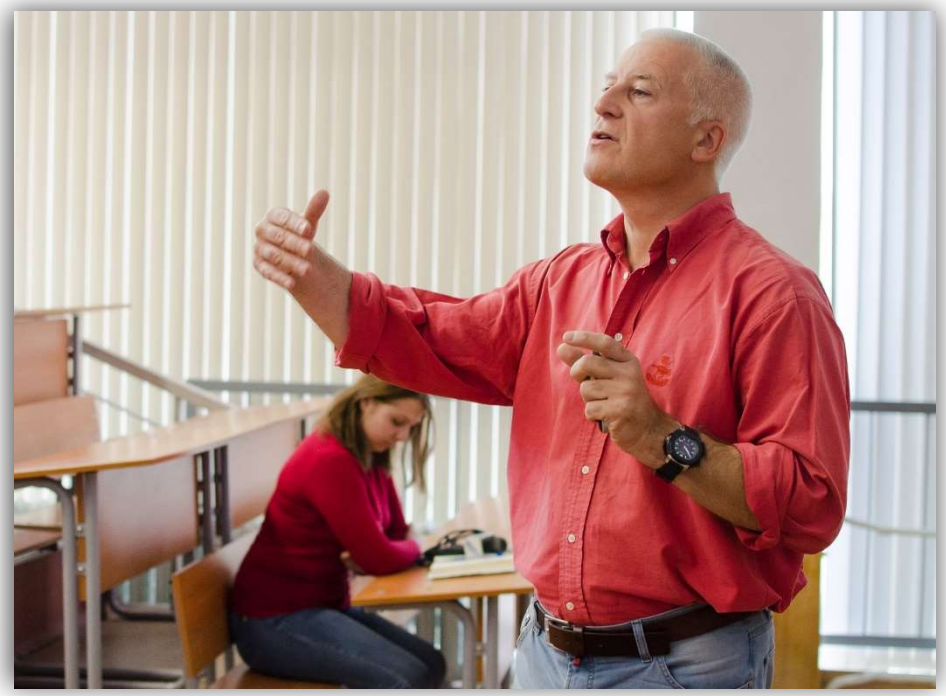
Fig. 1. Communication technologies and Intelligent Data Processing programme outline

The educational process will be organized in English. Leading specialists in training areas from around the world will be involved in the teaching of disciplines. Students would be able to study the cutting-edge solutions from the leaders of the market. The education and project work of the students would be provided using the facilities of such Laboratories of School of Electronic Engineering and Computer Science of SUSU as:

- Samsung IoT Academy
- Emerson PlantWeb Center of Competence
- Kaspersky Research and Education Centre
- Smart Home Lab
- Supercomputer Centre of SUSU

Fig. 2. Emerson PlantWeb Center of Competence

Fig. 3. Supercomputer Centre of SUSU



The director of the programme: prof. Franck Leprevost, head of Laboratory of Algorithmics, Cryptology and Security (LACS), University of Luxembourg.

Programme outline

Semester		1	2	3	4	5	6	7	8
	ECTS	1A	1S	2A	2S	3A	3S	4A	4S
CORE COMPETENCE									
GENERAL EDUCATION	**8**	**3**				**3**		**3**	
B.00 - Physical Training	**2**								
B.01 - History	**3**	3							
B.02 - Philosophy	**3**					3			
B.03 - Safety of life	**3**							3	
FUNDAMENTAL MODULE	**39**	**9**	**11**	**6**	**13**				
B.04 - Algebra and Geometry	**4**	4							
B.05 - Mathematical Analysis	**10**	5	5						
B.08 - Physics	**12**		6	6					
B.06 - Special chapters in Mathematics	**6**				6				
B.07 - Probability Theory and Statistics	**4**				4				
BF.1.01 - Mathematical methods of signals and processes representation	**3**				3				
ENGLISH LANGUAGE	**20**	**5**	**5**	**5**	**5**				
B.09 - Foreign Language	**15**	5	5	5					
BF.01 - Foreign language for business	**5**				5				
ENGINEERING MODULE	**30**	**6**		**6**	**6**	**4**	**8**		
BF.10 - Basics of digital devices and mathematical logic	**2**	2							
B.10 - Engineering Graphics	**4**	4							

Semester		1	2	3	4	5	6	7	8
	ECTS	1A	1S	2A	2S	3A	3S	4A	4S
B.13 - Basics of Circuit Theory	**3**			3					
B.14 - Electronic media materials	**3**			3					
B.11 - Electronics	**3**				3				
BF.16 - Information Theory	**3**				3				
B.12 - Circuit Engineering	**4**					4			
BF.15 - Automated design of electronic devices	**3**						3		
B.15 - Electrodynamics	**5**						5		
COMMUNICATIONS TECHNOLOGIES AND INTELLIGENT DATA PROCESSING									
SOFTWARE DEVELOPMENT	**35**	**4**	**11**	**4**	**4**	**3**	**7**		**2**
BF.02 - Basics of Programming	**4**	4							
BF.08 - Computer Architecture	**3**		3						
EF.03 - High Level Language Programming	**4**		4						
BF.05 - Structures and algorithms of data processing	**4**		4						
BF.04 - Object-oriented programming	**4**			4					
BF.25 - Mobile development	**4**				4				
BF.09 - Machine-oriented languages	**3**					3			
BF.06 - Basics of Operating Systems	**3**						3		
BF.21 - Software Engineering	**4**						4		
BF.12 - Microprocessor systems	**2**								2
COMPUTER NETWORKS	**17**					**3**		**10**	**4**

Semester		1	2	3	4	5	6	7	8
	ECTS	1A	1S	2A	2S	3A	3S	4A	4S
BF.19 - Computer Systems Networks	3					3			
BF.20 - Introduction to service-oriented architecture	3							3	
BF.1.03 - Wireless Networks	3							3	
FM.23 - Information security of computer networks	4							4	
BF.1.05 - Network routing and switching	4								4
INTELLIGENT DATA PROCESSING	**12**				**2**	**3**		**7**	
BF.26 - Theory, methods and means of parallel processing of information	2				2				
BF.22 - Methods of data storage and processing	3					3			
BF.1.08.01 - Intelligent data analysis	3							3	
BF.1.04 - Basics of machine learning	4							4	
COMMUNICATION TECHNOLOGIES	**36**					**4**	**10**	**10**	**12**
B.16 - General theory of communication	8					4	4		
BF.11 - Digital Signal Processing	3						3		
BF.24 - Power supply to telecommunication devices and systems	3						3		
BF.1.02 - Mobile networks and systems	3							3	
BF.14 - Transmitting and receiving radio-devices	4							7	

Semester		1	2	3	4	5	6	7	8
	ECTS	1A	1S	2A	2S	3A	3S	4A	4S
BF.13 - Standards and Technologies for Mobile Communication Systems	**4**								4
BF.1.07.01 - Microwave and Antenna Devices	**4**								4
BF.17 - Satellite navigation systems	**2**								2
BF.18 - Basics of radiophotonics	**2**								2
INTERNET OF THINGS	**10**					**7**	**3**		
BF.07 - Basics of metrology, methods and measuring instruments	**3**					3			
BF.1.06 - Internet of Things Technologies	**7**					4	3		

Additional information:

https://eecs.susu.ru/en/

eecs@susu.ru