MATRIX of existing Master course (Brest State Technical University, Rep. of Belarus)

Name of compulsory chair	Year	Semester	Number of ECTS	Number of elective chairs	List of available elective chairs	Short description	Relation between the contents and RETHINK's theme
CLIMATE INGENEERING AND ENVIRONMENT PROTECTION							
Hydrology and Hydrometrics	1st year	1 semester	4 ECTS 16 hours lectures, 8 hours practical classes			Factors and rules of river flow. Measuring instruments and methods of measuring and defining of basic hydrological characteristics of water courses. Methods for calculating the parameters and characteristics of the regime of water bodies.	Knowledge of hydrological characteristics allows to determine the basic climate factors.
Meteorology and Climatology	1st year	1 semester	6 ECTS 32 hours lectures, 16 hours practical classes			Physics of Earth's atmosphere. Spatial distribution of pressure, temperature, humidity, wind speed and other meteorological elements. Processes of transformation of solar radiation in geographical shell. System of general circulation of the atmosphere. Rules of climate formation and geographical distribution of climates. Climate evolution on Earth. Contemporary problems of meteorology and climatology.	This curricular unit is crucial for understanding of basic principles of climate formation
Environmental Monitoring	1st year	1 semester	6 ECTS 32 hours lectures, 16 hours practical classes			Types of environmental monitoring. Goals and objectives of environmental monitoring. Legislation, methodological and measurement basis of monitoring. Types, sources and classification of pollutions. Research methods. Instruments and equipment for sampling and analysis. Types of Remote Sensing. Technology and methods of deciphering of aerospace photographs Monitoring of natural radionuclides. Monitoring of water resources, forest, agricultural land, geological environment and biological resources.	The objective of this curricular unit is to study the basic methods of initial data acquisition
Management of Natural Resources	1st year	1 semester	4 ECTS 16 hours lectures, 8 hours practical classes			Natural resources and environmental management. Water resources. Characteristics of water use. Wastewater and pollutant discharges. Types of river regulation. Principles of composing of water balances. Water use in various sectors of the economy. Land resources. Objectives and principles of cadastral evaluation. Industrial pollution and degradation of the land. Recreation and resource potential. Global, regional and local atmospheric problems.	The objective of this curricular unit is to study the basic principles of rational use of natural resources

Environmental Chemistry	1st year	1 semester	6 ECTS 32 hours lectures, 16 hours practical classes			Atmospheric chemistry. Composition and structure of the earth's atmosphere. Changing the composition of the atmosphere over time. The ozone layer. Stratospheric chemical reactions of ozone destruction. CFCs. Dust and aerosols. Carbon dioxide. The greenhouse effect. Toxic effects of low concentrations of carbon dioxide. Carbon monoxide. Sulfur oxide (IV). Nitrogen oxides. Photochemical smog. Chemistry of the hydrosphere. Structure of natural waters. Fresh water. The specific properties of water. Structure of consumption of water. Garbage Island. Sources of oil to the sea and oil spills. Pollution of fresh water. Eutrophication of water bodies. Surface-active substances (surfactants) as a contaminant of the hydrosphere. Heavy metal ions. Soil Chemistry.	This curricular unit is crucial for understanding of chemical processes in environment
Total			26				
Geographic Information Systems (GIS)	1st year	2 semester	4 ECTS 16 hours lectures, 8 hours practical classes			Data sources. Input and output data. Raster maps and their vectorization. Raster GIS. Vector GIS. Querying the map database. Cartographic and user's databases. GIS standards. Three-dimensional mapping. Spatial interpolation methods. Available cartographic database.	This curricular unit is crucial for ability of visualization of climate data
Climatological Processing of Meteorological Data	1st year	2 semester	6 ECTS 32 hours lectures, 16 hours practical classes			Systematization of primary information. Processing of climatological series of observations. Calculation of basic climatic parameters and interpretation of the research results. Methods for calculating of digital characteristics of meteorological elements. Effect of non-climatic factors.	The objective of this curricular unit is to study the methods of meteorological data processing
Environmental Impact Assessment	1st year	2 semester	2 ECTS 16 hours lectures			Formation of an international system of environmental assessment. Environmental impact assessment in the urban planning and investment planning in the Republic of Belarus. List of environmentally hazardous activities. Stages of the environmental impact assessment. Procedure for public discussions. Estimate of impacts on the environment. Indicators of impact on the environment. Methodology for environmental assessment of plans, programs and strategies	Environmental impact assessment allows to minimize the environmental pollution

Photographic Technologies in Environment Protection	1st year	2 semester	2 ECTS 16 hours lectures			Methods and tools for traditional and digital photographic technology of production, storage and processing of information in the form of images. Reproduction, macro and microphotography. Multispectral photography. Aero-space and photographic methods in environmental activities.	The objective of this curricular unit is to study the basic principles of photographic technologies in environment protection
Total			14 ECTS				
Total for Master course:			40 ECTS				

There are 4 obligatory curricular units in Rep. of Belarus for all master programs:
– Philosophy and Methodology of Science (60 hours lectures and 44 hours practical classes)
– Foreign Language (140 hours practical classes)
– Basics of Information Technologies (36 hours lectures and 36 hours practical classes)
– Educational Science and Psychology (16 hours lectures and 18 hours practical classes)