OK EX 1 - Mathematics, physics 1

Algebra, geometry, mathematical analysis, mathematical modelling, numerical mathematics, probability theory and mathematical statistics

Mathematical methods in general theory of relativity, in quantum field theory, in atomic, nuclear and particle physics, in statistical physics, in plasma physics, quantum computing

Particle physics and interactions between them, properties of plasma and its interaction with the surface of solids, atoms and their interaction with the external environment, structure of atomic nuclei, nuclear processes, behaviour of particles in the nuclear environment.

Radioanalytical and detection methods that lead to specific goals by particle physics, nuclear physics or plasma physics, and to the development of plasma technologies.

Physical properties of solid, liquid and gas substances at low and very low temperatures.

Theoretical astrophysics and cosmology, physics of stars and the Sun, interplanetary environment and solar wind, planets and other bodies, magnetosphere and ionosphere of the Earth, atmospheric physics, meteorology including atmospheric pollution and atmospheric aerosols, climatology including historical climatology, paleoclimatology, climate change and hydrology. Physical geography, geographic cartography and geodesy.

Geophysics, geochemistry, geology and mineralogy, hydrogeology and palaeontology.

OK EX 2 - Physics 2

Physical and chemical metallurgy; electrometallurgy and hydrometallurgy; unconventional ways of preparation of materials, new materials (metals, ceramics, composites, etc.), processes for their preparation and processing, properties of melt metals and slags, modelling methods, technology of preparation and processing of metallic and non-metallic materials

Materials science and materials engineering, i.e., study of preparation, structure and properties of metal, inorganic non-metallic, polymeric, composite materials including materials for medical applications. Examination of physical, mechanical, chemical and biological properties of materials. Theoretical approaches to synthesis of new materials and simulation in materials research

Structural properties of materials, solid materials, surface modifications, thin films, new materials (oxides, composites, organic-inorganic hybrids, nanoparticles)

Physics of condensed matter and materials, both theoretical and experimental.

Biophysics and macromolecular physics, physical and quantum optics

OK EX 3 – Chemistry

Physical and Analytical Chemical Sciences

Physical chemistry, spectroscopic and spectrometric techniques, molecular structure, surface science, nanostructures, analytical chemistry, chemical physics, chemical instrumentation and method development in chemistry, electrochemistry, heterogeneous catalysis, physical chemistry of biological systems, chemical reactions: mechanisms, dynamics, kinetics and catalytic reactions , theoretical and computational chemistry, radiation chemistry, nuclear chemistry, photochemistry, corrosion, characterisation methods of materials

Synthesis and chemical processes

Ionic liquids, biomaterials synthesis, intelligent materials – self assembled materials, environment chemistry, coordination chemistry, colloid chemistry, biological chemistry, chemistry of condensed matter, homogeneous catalysis, macromolecular chemistry, polymer chemistry, supramolecular chemistry, organic chemistry, molecular chemistry, combinatorial chemistry

Chemical engineering and technical chemistry

Chemisty in other sciences

Atmospheric chemistry, interstellar chemistry, geochemistry, biogeochemistry, environmental chemistry

OK EX 4 – Medical sciences

Genetics, tumour and experimental oncology, medical biochemistry (metabolism and nutrition)

Microbiology including virology, immunology, parasitology, epidemiology and hygiene with the exclusion of environmental microbiology

Medical biochemistry, physiology, pharmacology, neuroscience and toxicology

Molecular, cellular, structural and developmental biology, "omics", bioinformatics

OK EX 5 – Biological and environment sciences

Physiology and genetics, molecular, cellular and developmental biology of plants, genetics, breeding and biochemistry of plants and phytopathology

Animal physiology and genetics and veterinary medicine

Ecotoxicology, environmental chemistry and environmental biotechnology, food industry

Ecology including landscape ecology, forestry, pedology, soil biology, hydrobiology, environmental microbiology

Botany of zoology and mycology including physiology, phylogeny, taxonomy and systematics, biogeography, ethology and evolution

OK EX 6 - Social Sciences

Economic sciences, macroeconomics, microeconomics, econometrics, quantitative methods in economics. Business sciences, management, administration, governance, finance

Sociology, demography, social geography, media studies. Social and cultural anthropology

Psychological sciences, pedagogy and kinanthropology

Legal studies and political science

OK EX 7 - Humanities

Philosophy (including philosophical aesthetics), religious studies and theology

Archaeology, ancient history, older Czech, European and world history, Auxiliary sciences of history (retrospective anthropology, archeozoology and archeobotany).
Modern history, contemporary history, history of 19th and 20th century, political, economic and social aspects of history, methodology and historiography. History of science, modern cultural history, ethnology and ethnography

Linguistics and literary studies

Study of the art (architecture and fine arts, visual culture, theatre studies, film, music, aesthetics, new media art and audiovisual arts)

OK EX 8 – Technical sciences, informatics

Cybernetics, informatics and information processing

Computer architecture, database and their processing, theoretical computer sciences, graphics, image processing, visualization, computer and human interaction, speech and language processing, informatics and digital libraries, intelligent systems, machine learning, scientific computations, simulation and modelling tools, multimedia , software, operating systems, development methods, programming languages, algorithms, cryptology, security and privacy, bioinformatics and biometrics

System and communication engineering

Control systems, electronics and electrical engineering (semiconductors, components, systems), simulation engineering and modelling, system engineering, micro- and nanoelectronics, optoelectronics, communication technology, high frequency technology,

signal processing, networks (communication networks, sensor networks, robotic networks, etc.), human-device interface, robotics

Product and manufacturing engineering (design and control of products and processes, design methods, building and mechanical engineering, material engineering)

Aerospace engineering, mechanical engineering, computational engineering, fluid mechanics, hydraulic, turbo and piston engines , energy processes engineering (production, distribution and use), microsystem engineering, mechanical and manufacturing engineering, material engineering (biomaterials, metals, ceramics, polymers, composites), manufacturing technology and manufacturing processes, product design, ergonomics, human-device interface, sustainable design (recycling, environment, eco-design), lightweight construction, textile technology, industrial bioengineering, biogas