

## **ALLEGATO 1**

### **Social Sciences and Humanities**

**SH1 Individuals, Markets and Organisations:** Economics, finance and management

SH1\_1 Macroeconomics; monetary economics; economic growth

SH1\_2 International trade; international business; international management; spatial economics

SH1\_3 Financial economics; monetary economics

SH1\_4 Financial economics; banking; corporate finance; international finance; accounting; auditing; insurance

SH1\_5 Labour and demographic economics; human resource management

SH1\_6 Econometrics; operations research

SH1\_7 Behavioural economics; experimental economics; neuro-economics

SH1\_8 Microeconomics; game theory

SH1\_9 Industrial organisation; strategy; entrepreneurship

SH1\_10 Management; marketing; organisational behaviour; operations management

SH1\_11 Technological change, innovation, research & development

SH1\_12 Agricultural economics; energy economics; environmental economics

SH1\_13 Public economics; political economics; law and economics

SH1\_14 Quantitative economic history; institutional economics; economic systems

**SH2 Institutions, Values, Environment and Space:** Political science, law, sustainability science, geography, regional studies and planning

SH2\_1 Political systems, governance

SH2\_2 Democratisation and social movements

SH2\_3 Conflict resolution, war

SH2\_4 Legal studies, constitutions, human rights, comparative law

SH2\_5 International relations, global and transnational governance

SH2\_6 Sustainability sciences, environment and resources

SH2\_7 Environmental and climate change, societal impact and policy

SH2\_8 Energy, transportation and mobility

SH2\_9 Urban, regional and rural studies

SH2\_10 Land use and regional planning

SH2\_11 Human, economic and social geography

SH2\_12 GIS, spatial analysis; big data in political, geographical and legal studies

**SH3 The Social World, Diversity, Population:** Sociology, social psychology, demography, education, communication

SH3\_1 Social structure, social mobility

SH3\_2 Inequalities, discrimination, prejudice, aggression and violence, antisocial behaviour

SH3\_3 Social integration, exclusion, prosocial behavior  
SH3\_4 Attitudes and beliefs  
SH3\_5 Social influence; power and group behaviour; classroom management  
SH3\_6 Diversity and identities, gender, interethnic relations  
SH3\_7 Social policies, welfare  
SH3\_8 Population dynamics; households, family and fertility  
SH3\_9 Health, ageing and society  
SH3\_10 Social aspects of learning, curriculum studies, educational policies  
SH3\_11 Communication and information, networks, media  
SH3\_12 Digital social research  
SH3\_13 Science and technology studies

**SH4 The Human Mind and Its Complexity:** Cognitive science, psychology, linguistics, philosophy of mind

SH4\_1 Cognitive basis of human development and education, developmental disorders;  
comparative cognition  
SH4\_2 Personality and social cognition; emotion  
SH4\_3 Clinical and health psychology  
SH4\_4 Neuropsychology  
SH4\_5 Attention, perception, action, consciousness  
SH4\_6 Learning, memory; cognition in ageing  
SH4\_7 Reasoning, decision-making; intelligence  
SH4\_8 Language learning and processing (first and second languages)  
SH4\_9 Theoretical linguistics; computational linguistics  
SH4\_10 Language typology  
SH4\_11 Pragmatics, sociolinguistics, discourse analysis  
SH4\_12 Philosophy of mind, philosophy of language  
SH4\_13 Philosophy of science, epistemology, logic

**SH5 Cultures and Cultural Production:** Literature, philology, cultural studies, anthropology, study of the arts, philosophy

SH5\_1 Classics, ancient literature and art  
SH5\_2 Theory and history of literature, comparative literature  
SH5\_3 Philology and palaeography; historical linguistics  
SH5\_4 Visual and performing arts, film, design  
SH5\_5 Music and musicology; history of music  
SH5\_6 History of art and architecture, arts-based research  
SH5\_7 Museums, exhibitions, conservation and restoration  
SH5\_8 Cultural studies, cultural identities and memories, cultural heritage  
SH5\_9 Social anthropology, religious studies, symbolic representation  
SH5\_10 Metaphysics, philosophical anthropology; aesthetics  
SH5\_11 Ethics; social and political philosophy  
SH5\_12 History of philosophy  
SH5\_13 Computational Modelling and Digitisation in the Cultural Sphere

## **SH6 The Study of the Human Past: Archaeology and history**

SH6\_1 Historiography, Theory and methods in history, including the analysis of digital data

SH6\_2 Classical archaeology, history of archaeology

SH6\_3 General archaeology, archaeometry, landscape archaeology

SH6\_4 Prehistory, palaeoanthropology, palaeodemography, protohistory

SH6\_5 Ancient history

SH6\_6 Medieval history

SH6\_7 Early modern history

SH6\_8 Modern and contemporary history

SH6\_9 Colonial and post-colonial history

SH6\_10 Global history, transnational history, comparative history, entangled histories

SH6\_11 Social and economic history

SH6\_12 Gender history; Cultural History; History of Collective Identities and Memories

SH6\_13 History of Ideas, Intellectual History, history of economic thought

SH6\_14 History of Science, Medicine and Technologies

## **Physical Sciences and Engineering**

**PE1 Mathematics:** All areas of mathematics, pure and applied, plus mathematical foundations of computer science, mathematical physics and statistics

- PE1\_1 Logic and foundations
- PE1\_2 Algebra
- PE1\_3 Number theory
- PE1\_4 Algebraic and complex geometry
- PE1\_5 Geometry
- PE1\_6 Topology
- PE1\_7 Lie groups, Lie algebras
- PE1\_8 Analysis
- PE1\_9 Operator algebras and functional analysis
- PE1\_10 ODE and dynamical systems
- PE1\_11 Theoretical aspects of partial differential equations
- PE1\_12 Mathematical physics
- PE1\_13 Probability
- PE1\_14 Statistics
- PE1\_15 Discrete mathematics and combinatorics
- PE1\_16 Mathematical aspects of computer science
- PE1\_17 Numerical analysis
- PE1\_18 Scientific computing and data processing
- PE1\_19 Control theory and optimisation
- PE1\_20 Application of mathematics in sciences
- PE1\_21 Application of mathematics in industry and society

**PE2 Fundamental Constituents of Matter:** Particle, nuclear, plasma, atomic, molecular, gas, and optical physics

- PE2\_1 Fundamental interactions and fields
- PE2\_2 Particle physics
- PE2\_3 Nuclear physics
- PE2\_4 Nuclear astrophysics
- PE2\_5 Gas and plasma physics
- PE2\_6 Electromagnetism
- PE2\_7 Atomic, molecular physics
- PE2\_8 Ultra-cold atoms and molecules
- PE2\_9 Optics, non-linear optics and nano-optics
- PE2\_10 Quantum optics and quantum information
- PE2\_11 Lasers, ultra-short lasers and laser physics
- PE2\_12 Acoustics
- PE2\_13 Relativity
- PE2\_14 Thermodynamics
- PE2\_15 Non-linear physics
- PE2\_16 General physics
- PE2\_17 Metrology and measurement
- PE2\_18 Statistical physics (gases)

**PE3 Condensed Matter Physics:** Structure, electronic properties, fluids, nanosciences, biophysics

PE3\_1 Structure of solids and liquids

PE3\_2 Mechanical and acoustical properties of condensed matter, Lattice dynamics

PE3\_3 Transport properties of condensed matter

PE3\_4 Electronic properties of materials, surfaces, interfaces, nanostructures, etc.

PE3\_5 Semiconductors and insulators: material growth, physical properties

PE3\_6 Macroscopic quantum phenomena: superconductivity, superfluidity, etc.

PE3\_7 Spintronics

PE3\_8 Magnetism and strongly correlated systems

PE3\_9 Condensed matter – beam interactions (photons, electrons, etc.)

PE3\_10 Nanophysics: nanoelectronics, nanophotonics, nanomagnetism, nanoelectromechanics, etc.

PE3\_11 Mesoscopic physics

PE3\_12 Molecular electronics

PE3\_13 Structure and dynamics of disordered systems: soft matter (gels, colloids, liquid crystals, etc.), glasses, defects, etc.

PE3\_14 Fluid dynamics (physics)

PE3\_15 Statistical physics: phase transitions, noise and fluctuations, models of complex systems, etc.

PE3\_16 Physics of biological systems

**PE4 Physical and Analytical Chemical Sciences:** Analytical chemistry, chemical theory, physical chemistry/chemical physics

PE4\_1 Physical chemistry

PE4\_2 Spectroscopic and spectrometric techniques

PE4\_3 Molecular architecture and Structure

PE4\_4 Surface science and nanostructures

PE4\_5 Analytical chemistry

PE4\_6 Chemical physics

PE4\_7 Chemical instrumentation

PE4\_8 Electrochemistry, electrodialysis, microfluidics, sensors

PE4\_9 Method development in chemistry

PE4\_10 Heterogeneous catalysis

PE4\_11 Physical chemistry of biological systems

PE4\_12 Chemical reactions: mechanisms, dynamics, kinetics and catalytic reactions

PE4\_13 Theoretical and computational chemistry

PE4\_14 Radiation and Nuclear chemistry

PE4\_15 Photochemistry

PE4\_16 Corrosion

PE4\_17 Characterisation methods of materials

PE4\_18 Environment chemistry

**PE5 Synthetic Chemistry and Materials:** Materials synthesis, structure-properties relations, functional and advanced materials, molecular architecture, organic chemistry

PE5\_1 Structural properties of materials

PE5\_2 Solid state materials

PE5\_3 Surface modification

PE5\_4 Thin films

PE5\_5 Ionic liquids

PE5\_6 New materials: oxides, alloys, composite, organic-inorganic hybrid, nanoparticles

PE5\_7 Biomaterials, biomaterials synthesis

PE5\_8 Intelligent materials – self assembled materials

PE5\_9 Coordination chemistry

PE5\_10 Colloid chemistry

PE5\_11 Biological chemistry

PE5\_12 Chemistry of condensed matter

PE5\_13 Homogeneous catalysis

PE5\_14 Macromolecular chemistry

PE5\_15 Polymer chemistry

PE5\_16 Supramolecular chemistry

PE5\_17 Organic chemistry

PE5\_18 Molecular chemistry

PE5\_19 Combinatorial chemistry

**PE6 Computer Science and Informatics:** Informatics and information systems, computer science, scientific computing, intelligent systems

PE6\_1 Computer architecture, pervasive computing, ubiquitous computing

PE6\_2 Computer systems, parallel/distributed systems, sensor networks, embedded

systems, cyber-physical systems

PE6\_3 Software engineering, operating systems, computer languages

PE6\_4 Theoretical computer science, formal methods, and quantum computing

PE6\_5 Cryptology, security, privacy, quantum crypto

PE6\_6 Algorithms, distributed, parallel and network algorithms, algorithmic game theory

PE6\_7 Artificial intelligence, intelligent systems, multi agent systems

PE6\_8 Computer graphics, computer vision, multi media, computer games

PE6\_9 Human computer interaction and interface, visualisation and natural language processing

PE6\_10 Web and information systems, database systems, information retrieval and digital libraries, data fusion

PE6\_11 Machine learning, statistical data processing and applications using signal processing (e.g. speech, image, video)  
PE6\_12 Scientific computing, simulation and modelling tools  
PE6\_13 Bioinformatics, biocomputing, and DNA and molecular computation

**PE7 Systems and Communication Engineering:** Electrical, electronic, communication, optical and systems engineering

PE7\_1 Control engineering  
PE7\_2 Electrical engineering: power components and/or systems  
PE7\_3 Simulation engineering and modelling  
PE7\_4 (Micro and nano) systems engineering  
PE7\_5 (Micro and nano) electronic, optoelectronic and photonic components  
PE7\_6 Communication technology, high-frequency technology  
PE7\_7 Signal processing  
PE7\_8 Networks (communication networks, sensor networks, networks of robots, etc.)  
PE7\_9 Man-machine-interfaces  
PE7\_10 Robotics  
PE7\_11 Components and systems for applications (in e.g. medicine, biology, environment)  
PE7\_12 Electrical energy production, distribution, application

**PE8 Products and Processes Engineering:** Product design, process design and control, construction methods, civil engineering, energy processes, material engineering

PE8\_1 Aerospace engineering  
PE8\_2 Chemical engineering, technical chemistry  
PE8\_3 Civil engineering, architecture, maritime/hydraulic engineering, geotechnics, waste treatment  
PE8\_4 Computational engineering  
PE8\_5 Fluid mechanics, hydraulic-, turbo-, and piston engines  
PE8\_6 Energy processes engineering  
PE8\_7 Mechanical and manufacturing engineering (shaping, mounting, joining, separation)  
PE8\_8 Materials engineering (metals, ceramics, polymers, composites, etc.)  
PE8\_9 Production technology, process engineering  
PE8\_10 Industrial design (product design, ergonomics, man-machine interfaces, etc.)  
PE8\_11 Sustainable design (for recycling, for environment, eco-design)  
PE8\_12 Lightweight construction, textile technology  
PE8\_13 Industrial bioengineering

**PE9 Universe Sciences:** Astro-physics/chemistry/biology; solar system; stellar, galactic and extragalactic astronomy, planetary systems, cosmology, space science, instrumentation

- PE9\_1 Solar and interplanetary physics
- PE9\_2 Planetary systems sciences
- PE9\_3 Interstellar medium
- PE9\_4 Formation of stars and planets
- PE9\_5 Astrobiology
- PE9\_6 Stars and stellar systems
- PE9\_7 The Galaxy
- PE9\_8 Formation and evolution of galaxies
- PE9\_9 Clusters of galaxies and large scale structures
- PE9\_10 High energy and particles astronomy – X-rays, cosmic rays, gamma rays, neutrinos
- PE9\_11 Relativistic astrophysics
- PE9\_12 Dark matter, dark energy
- PE9\_13 Gravitational astronomy
- PE9\_14 Cosmology
- PE9\_15 Space Sciences
- PE9\_16 Very large data bases: archiving, handling and analysis
- PE9\_17 Instrumentation - telescopes, detectors and techniques

**PE10 Earth System Science:** Physical geography, geology, geophysics, atmospheric sciences, oceanography, climatology, cryology, ecology, global environmental change, biogeochemical cycles, natural resources management

- PE10\_1 Atmospheric chemistry, atmospheric composition, air pollution
- PE10\_2 Meteorology, atmospheric physics and dynamics
- PE10\_3 Climatology and climate change
- PE10\_4 Terrestrial ecology, land cover change
- PE10\_5 Geology, tectonics, volcanology
- PE10\_6 Palaeoclimatology, palaeoecology
- PE10\_7 Physics of earth's interior, seismology, volcanology
- PE10\_8 Oceanography (physical, chemical, biological, geological)
- PE10\_9 Biogeochemistry, biogeochemical cycles, environmental chemistry
- PE10\_10 Mineralogy, petrology, igneous petrology, metamorphic petrology
- PE10\_11 Geochemistry, crystal chemistry, isotope geochemistry, thermodynamics
- PE10\_12 Sedimentology, soil science, palaeontology, earth evolution
- PE10\_13 Physical geography
- PE10\_14 Earth observations from space/remote sensing
- PE10\_15 Geomagnetism, palaeomagnetism
- PE10\_16 Ozone, upper atmosphere, ionosphere
- PE10\_17 Hydrology, water and soil pollution
- PE10\_18 Cryosphere, dynamics of snow and ice cover, sea ice, permafrosts and ice sheets



## Life Sciences

**LS1 Molecular and Structural Biology and Biochemistry:** Molecular synthesis, modification and interaction, biochemistry, biophysics, structural biology, metabolism, signal transduction

LS1\_1 Molecular interactions

LS1\_2 General biochemistry and metabolism

LS1\_3 DNA synthesis, modification, repair, recombination and degradation

LS1\_4 RNA synthesis, processing, modification and degradation

LS1\_5 Protein synthesis, modification and turnover

LS1\_6 Lipid synthesis, modification and turnover

LS1\_7 Carbohydrate synthesis, modification and turnover

LS1\_8 Biophysics (e.g. transport mechanisms, bioenergetics, fluorescence)

LS1\_9 Structural biology (crystallography and EM)

LS1\_10 Structural biology (NMR)

LS1\_11 Biochemistry and molecular mechanisms of signal transduction

**LS2 Genetics, Genomics, Bioinformatics and Systems Biology:** Molecular and population genetics, genomics, transcriptomics, proteomics, metabolomics, bioinformatics, computational biology, biostatistics, biological modelling and simulation, systems biology, genetic epidemiology

LS2\_1 Genomics, comparative genomics, functional genomics

LS2\_2 Transcriptomics

LS2\_3 Proteomics

LS2\_4 Metabolomics

LS2\_5 Glycomics

LS2\_6 Molecular genetics, reverse genetics and RNAi

LS2\_7 Quantitative genetics

LS2\_8 Epigenetics and gene regulation

LS2\_9 Genetic epidemiology

LS2\_10 Bioinformatics

LS2\_11 Computational biology

LS2\_12 Biostatistics

LS2\_13 Systems biology

LS2\_14 Biological systems analysis, modelling and simulation

**LS3 Cellular and Developmental Biology:** Cell biology, cell physiology, signal transduction, organogenesis, developmental genetics, pattern formation in plants and animals, stem cell biology

LS3\_1 Morphology and functional imaging of cells

LS3\_2 Cell biology and molecular transport mechanisms

LS3\_3 Cell cycle and division

LS3\_4 Apoptosis

LS3\_5 Cell differentiation, physiology and dynamics

LS3\_6 Organelle biology

LS3\_7 Cell signalling and cellular interactions

LS3\_8 Signal transduction

LS3\_9 Development, developmental genetics, pattern formation and embryology in animals

LS3\_10 Development, developmental genetics, pattern formation and embryology in plants

LS3\_11 Cell genetics

LS3\_12 Stem cell biology

**LS4 Physiology, Pathophysiology and Endocrinology:** Organ physiology, pathophysiology, endocrinology, metabolism, ageing, tumorigenesis, cardiovascular disease, metabolic syndrome

LS4\_1 Organ physiology and pathophysiology

LS4\_2 Comparative physiology and pathophysiology

LS4\_3 Endocrinology

LS4\_4 Ageing

LS4\_5 Metabolism, biological basis of metabolism related disorders

LS4\_6 Cancer and its biological basis

LS4\_7 Cardiovascular diseases

LS4\_8 Non-communicable diseases (except for neural/psychiatric, immunity-related, metabolism-related disorders, cancer and cardiovascular diseases)

**LS5 Neurosciences and Neural Disorders:** Neurobiology, neuroanatomy, neurophysiology, neurochemistry, neuropharmacology, neuroimaging, systems neuroscience, neurological and psychiatric disorders

LS5\_1 Neuroanatomy and neurophysiology

LS5\_2 Molecular and cellular neuroscience

LS5\_3 Neurochemistry and neuropharmacology

LS5\_4 Sensory systems (e.g. visual system, auditory system)

LS5\_5 Mechanisms of pain

LS5\_6 Developmental neurobiology

LS5\_7 Cognition (e.g. learning, memory, emotions, speech)

LS5\_8 Behavioural neuroscience (e.g. sleep, consciousness, handedness)

LS5\_9 Systems neuroscience

LS5\_10 Neuroimaging and computational neuroscience

LS5\_11 Neurological disorders (e.g. Alzheimer's disease, Huntington's disease, Parkinson's disease)

LS5\_12 Psychiatric disorders (e.g. schizophrenia, autism, Tourette's syndrome, obsessive compulsive disorder, depression, bipolar disorder, attention deficit hyperactivity disorder)

**LS6 Immunity and Infection:** The immune system and related disorders, infectious agents and diseases, prevention and treatment of infection

LS6\_1 Innate immunity and inflammation

LS6\_2 Adaptive immunity

LS6\_3 Phagocytosis and cellular immunity

LS6\_4 Immunosignalling

LS6\_5 Immunological memory and tolerance

LS6\_6 Immunogenetics

LS6\_7 Microbiology

LS6\_8 Virology

LS6\_9 Bacteriology

LS6\_10 Parasitology

LS6\_11 Prevention and treatment of infection by pathogens (e.g. vaccination, antibiotics, fungicide)

LS6\_12 Biological basis of immunity related disorders (e.g. autoimmunity)

LS6\_13 Veterinary medicine and infectious diseases in animals

**LS7 Diagnostic Tools, Therapies and Public Health:** Aetiology, diagnosis and treatment of disease, public health, epidemiology, pharmacology, clinical medicine, regenerative medicine, medical ethics

LS7\_1 Medical engineering and technology

LS7\_2 Diagnostic tools (e.g. genetic, imaging)

LS7\_3 Pharmacology, pharmacogenomics, drug discovery and design, drug therapy

LS7\_4 Analgesia and Surgery

LS7\_5 Toxicology

LS7\_6 Gene therapy, cell therapy, regenerative medicine

LS7\_7 Radiation therapy

LS7\_8 Health services, health care research

LS7\_9 Public health and epidemiology

LS7\_10 Environment and health risks, occupational medicine

LS7\_11 Medical ethics

**LS8 Evolutionary, Population and Environmental Biology:** Evolution, ecology, animal behaviour, population biology, biodiversity, biogeography, marine biology, ecotoxicology, microbial ecology

LS8\_1 Ecology (theoretical and experimental; population, species and community level)

LS8\_2 Population biology, population dynamics, population genetics

LS8\_3 Systems evolution, biological adaptation, phylogenetics, systematics, comparative biology

LS8\_4 Biodiversity, conservation biology, conservation genetics, invasion biology

LS8\_5 Evolutionary biology: evolutionary ecology and genetics, co-evolution

LS8\_6 Biogeography, macro-ecology  
LS8\_7 Animal behaviour  
LS8\_8 Environmental and marine biology  
LS8\_9 Environmental toxicology at the population and ecosystems level  
LS8\_10 Microbial ecology and evolution  
LS8\_11 Species interactions (e.g. food-webs, symbiosis, parasitism, mutualism)

**LS9 Applied Life Sciences and Non-Medical Biotechnology:** Applied plant and animal sciences; food sciences; forestry; industrial, environmental and non-medical biotechnologies, bioengineering; synthetic and chemical biology; biomimetics; bioremediation

LS9\_1 Non-medical biotechnology and genetic engineering (including transgenic organisms, recombinant proteins, biosensors, bioreactors, microbiology)  
LS9\_2 Synthetic biology, chemical biology and bio-engineering  
LS9\_3 Animal sciences (including animal husbandry, aquaculture, fisheries, animal welfare)  
LS9\_4 Plant sciences (including crop production, plant breeding, agroecology, soil biology)  
LS9\_5 Food sciences (including food technology, nutrition)  
LS9\_6 Forestry and biomass production (including biofuels)  
LS9\_7 Environmental biotechnology (including bioremediation, biodegradation)  
LS9\_8 Biomimetics  
LS9\_9 Biohazards (including biological containment, biosafety, biosecurity)