

National Military University "V. Levski" in national security, military science, machine technology, plant growing technologies, radiation protection, ecological risk and security, chemical toxic substances, applied mechanics, hydraulics and theory of automation.
 Medicine, veterinary medicine and agriculture - the smallest section in number unifies medical doctors, veterinarians and specialists in soy-bean growth from the **Veterinary Faculty of the University and the Soy-bean trial station in the town of Pavilkeni.**

Information sources:

1. USB members database Sofia
2. Information material provided by USB branches offices
3. <http://www.usb-bg.org>
4. <http://www.bas.bg>
5. <http://www.agrillacad.bg>

UNION OF SCIENTISTS IN BULGARIA

PRESENTATION

HISTORY

The Union of Scientists in Bulgaria (USB) was founded in October 1944 by 15 prominent Bulgarian scientists. The Union quickly expanded and became the largest organization of scientists and higher school lecturers. It now unifies scientists from different research areas, of different age, with different political views. During the years the Union has irrevocably stood its positions of independent, non-governmental, non-profit, non-political, professional and creative organization of scientists. The USB Statutes define the organization as "national, voluntary, non-governmental and democratic, creative and professional organization of scientists", "non-profit juridical body - association working for the benefit of society..." and a Union "... built and functioning on federative principles", continuing the innovative traditions of the scientific community in Bulgaria.

AIM

The main aim of the USB is to assist the advancement of science and higher education in the country, to promote their prestige and contribute to the prosperity of the Republic of Bulgaria. The USB acts as an independent partner and consultant to the Law- and Decision-makers in the elaboration and implementation of the national strategy for the development of science and higher education.
 The USB voices and protects the rights and interests of its members and assists their innovative and professional activities.

STRUCTURE

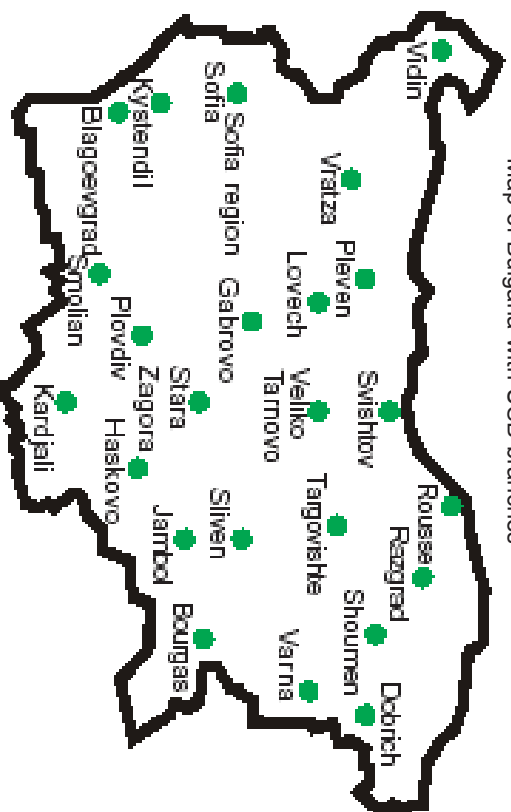
The USB performs its activities through units or structures built on research or geographical area principles, called **sections and branches**.
 The sections are units in the capital, consisting of at least 25 members of the same or similar research discipline. Sections presently functioning at the USB can be found on the next page graph.
 The branches are units of USB spread outside of the capital, all over the country, built on geographic principle. Branches can be created by minimum 25 members - scientists or university lecturers.

Sections in Sofia

Natural sciences	Engineering	Biological & medical sci.	Agriculture	Humanities & social sciences
<ul style="list-style-type: none"> ■ Informatics ■ Mathematics ■ Mechanics ■ Physics ■ Chemistry and pharmaceuticals 	<ul style="list-style-type: none"> ■ Military sciences ■ Geology and geography ■ Technical sciences 	<ul style="list-style-type: none"> ■ Biology ■ Biochemistry, biophysics and molec. biology ■ Genetics ■ Immunology ■ Medical sciences ■ Microbiology ■ Theoretical and evolution biology 	<ul style="list-style-type: none"> ■ Agrobiology ■ Veterinary medicine and zootechnics ■ Forestry ■ Plants physiology & biochemistry 	<ul style="list-style-type: none"> ■ Theological sciences ■ History ■ Philology ■ Philosophy ■ Economics ■ Pedagogy and psychology ■ Juridical science ■ Sociology

Branches of USB exist now in 25 towns: Blagoevgrad, Burgas, Varna, Veliko Tarnovo, Vidin, Vratza, Gabrovo, Dobrich, Kardjali, Kjustendil, Lovetch, Pazardjik, Pleven, Plovdiv, Razgrad, Rousse, Svishov, Sliven, Smoljan, Sofia Region, Stara

Map of Bulgaria with USB branches



Veliko Tarnovo

At present, the Academy trains specialist for the Navy and for the merchant marine in all areas of maritime life. Research and development are conducted at the Academy in maritime science and marine technologies.

Marine sciences are also represented at the **Institute of Oceanology** of the Bulgarian Academy of sciences located in Varna.

The research activities are in the field of marine physics, chemistry, geology and archaeology, biology and ecology, coastal dynamics and ocean technologies. It carries out complex monitoring of the Bulgarian part of the Black Sea, develops consulting and expert activities, prepares qualified marine scientists. Scientists of the institute perform educational activities and give lectures on over 50 subjects in different universities (Navy School, Technical University, Medical University and others).

The **Institute of Fish Resources** is part of the Agricultural Academy. It is the only research institute that carries regular tests in Bulgarian territorial waters and possesses a rich data base collected for many years now which makes it possible to draw conclusions on the basic trends and changes in the Black sea ecosystem. It has two scientific departments - marine and sweet water fishery, where research is carried out in two main directions: hydrobiology and Ichthyology.

The town is cradle of Bulgarian history and culture. The educational and scientific institutions cover mainly social and humanitarian sciences: history, languages and literature, pedagogy. Therefore Veliko Tarnovo branch members are mostly humanitarian and social sciences specialists lecturing at the **Veliko Tarnovo University** "Sv. Kiril and Metodii" in languages and literature, library and bibliography, history, philosophy, pedagogy, economics and computer systems and technologies.

A quite significant number are historians, archeologists, experts in restoration and conservation of archeological findings, investigators of medieval history, history of the old world, new history of Bulgaria, military history and arts.

Economics, finances, credits and insurance policy, healthcare economics, international relations and world economy, marketing and logistics, geography of tourism are the research fields of the economics section members. They are lecturers at the **University "V. Levski"**.

Military and technical sciences section includes lecturers at the

medical plants; raw materials processing technology of essential oil and medical plants. A licensed testing laboratory for analyses and certificate issuing for oils, drugs, plant extracts, sowing seeds, cosmetics and pharmaceuticals is established for the purpose of natural cosmetic production; The **Institute of Mountainous Animal Breeding and Agriculture** which deals with breeding, cultivar studies and reproduction of fruit trees, fodder production, meadow maintenance, cattle, buffalo, sheep and goats breeding.

Human medics work at **Trakia University** Faculty of medicine with University hospital and the **Medical college** Stara Zagora. The members of the sections in mechanics, technical sciences, economics, physics and mathematics lecture at Trakia University Faculty of economics, the Technical college Yambol, manage private companies; some of them come from the Academy of Sciences institutes and the National Astronomy Observatory "Juri Gagarin".

One of the important branches of the Union, the Varna branch has its headquarters in the town of Varna, situated on the northern part of the Black sea coast. One of the biggest city of Bulgaria, it is rich in intellectual potential and has unique specialists. In the 60-ties are created 6 sections, nowadays there are 5. The main ones unify members in "Medical sciences and stomatology", "Technical sciences", "Marine sciences and technology", "Social sciences, economics and law" and "Ocean sciences".

Medical doctors and dentists practice at the **Medical University Varna**, one of the biggest medical establishments in the county. For over forty-five years the University has trained medical professionals and experts in healthcare management and public health in its faculties of medicine, dental medicine, pharmacy and public health.

The technical sciences are presented at the **Technical University Varna**. Established in 1962 as the Institute of mechanics and electricity with only three faculties, now the Technical University Varna prepares engineering staff in its six faculties such as Shipbuilding, Mechanical engineering and technologies, Electrical engineering, Electronics, Computing and automation, Marine sciences and ecology.

Marine sciences and technology members work at the "N.Y. Vaptsarov" **Naval Academy**. It is the oldest technical school in Bulgaria with world fame and traditions in training sea experts.

Zagora, Targovishte, Haskovo, Shoumen and Jambol. The biggest branches operate in the towns with well developed scientific, educational and cultural establishments.

ACTIVITIES

To reach its aim, USB works in the following main directions:

- Elaborating expert views and statements on science and higher education policies, strategies, action plans, specifically in funding of science, scientific ranks and degrees, ranking of scientific and educational establishments, methods for assessment of research and researchers, interrelation education-science-innovation and other issues of significance for the scientific community and the advancement of science and society.
- Supporting its members in the exchange of knowledge and information, publication activities, better social status and working infrastructure and recreation.
- Participating in international cooperation and networks of scientists.

Forms of activities

- **Scientific events on different topics**
- More than 150 scientific events are organized annually by the USB and its units - International and national scientific congresses, national and regional conferences with foreign participation, scientific sessions, seminars, round-table discussions, eventually jointly with other organizations, institutes and higher education establishments. Every significant event is followed by a publication of the contributions.
- A number of traditional events are held regularly every year, such as:

- *National Forum on Science, held every four years, April, Sofia, organized by USB headquarters.*
- *Celebration of the Day of Bulgarian Revival Leaders and Bulgarian Scientists with Best Scientific Achievement Awards Ceremony, November, Sofia, organized by USB headquarters.*
- *Open Discussion club on science and higher education issues running through the year with 6 sessions annually, organized by USB headquarters.*
- *Archeology, history and cultural tourism conference, held every two years, May, Shoumen, organized by USB "Shoumen" branch.*

- *National Ecology Seminar, April, Sofia, organized by "Biology" section of USB.*
- *May Days of Science, May, Veliko Tarnovo, organized by USB "Veliko Tarnovo" branch.*
- *International Scientific Conference, June, Stara Zagora, organized by USB "Stara Zagora" branch.*
- *International Conference of Young Scientists, June, Plovdiv, organized by "Young Scientists Club" of Plovdiv*
- *National Congress on Theoretical and Applied Mechanics, September, organized by "Mechanics" Section of USB.*
- *National Congress of Microbiology, October, organized by "Microbiology" section of USB.*
- *Month of Science, October, Varna, organized by USB "Varna" branch.*
- *Telecommunications national conference, October, Sofia, organized by the "Technical Sciences" section of USB.*
- *Scientific conference Rousse, October, Rousse, organized by the USB "Rousse" branch and "A. Kanchev" University.*
- *Philosophy conference, October, Sofia, organized by 3 USB sections.*
- *Scientific conference on chemistry, biotechnologies and food technologies, October, Razgrad, organized by USB and "A. Kanchev" University "Razgrad" branches.*
- *Free Interdisciplinary Medical University, running through the year with 6 sessions annually, organized by "Medical Sciences" section of USB.*
- **Nation-wide discussions on science.** Strategy, role, place of Bulgarian scientists in the country and in the European research area are recurring topics. An open Discussion club runs through the year with 6 events annually focusing on the main concerns in science and higher education, their latest developments, draft laws, strategies etc.
 - **Expert studies and reviews** on the status of Bulgarian science and comparative analysis in relation to EU research.
 - **Publication and dissemination activities.** USB also operates a **Publishing house.** The official journal of the Union is the journal "Science" published since 1991 in six issues annually. "Science" is a bimonthly interdisciplinary journal that

StaraZagora

tional sections for testing and product certification and for control of parameters to working and environment are accredited according to international and European standards. The Centre has scientific statute and scientific council under the methodical leadership of Agricultural Academy Sofia. The **Multiprofile municipal hospital Rousse** is the working place of Rousse branch USB members - medical doctors, specialists in pediatrics, kinesitherapy and others.

One of the big USB branches, today the Stara Zagora UBS has roughly 450 regular members from Stara Zagora and the area organized in 9 departments and 2 clubs, covering almost all scientific fields, with veterinary medicine, livestock - breeding, agrobiology and human medicine being most widely represented.

Agriculture specialists and veterinarians lead in number and come from the **Trakia University Stara Zagora** which has a faculty in agriculture with majors in zoo engineering, agronomy, ecology and environment protection, agricultural engineering, fishery and aquaculture. They are also affiliated to four institutes within the Agricultural Academy, described hereafter: The **Cotton and Durum Wheat Research Institute Chirpan**, which performs activities for creating and maintaining new plant cultivars, developing new technologies in the area of agriculture and elite cattle breeding, more specifically conducts specific studies in breeding, agrotechnical and seed production, as well as applied and extension service activities in the area of cotton and durum wheat and since 2003 has been investigating technologies for growing sunflower in the conditions of Southern Bulgaria; The **Institute for Agriculture Karnobat**, which investigates the selection of barley, oats and other attractive for markets agricultural crops using modern methods of field, laboratory and mathematical evaluation, especially varieties resistant to abiotic and biotic stress with increased productivity and product quality and suitable for cultivation in terms of conventional or organic farming; as well as the betterment of local Karnobat breed especially milk sheep population and maintenance of fine-wool breed sheep; The **Institute of Roses, Essential and Medical Cultures**, whose main activities are introduction, selection and reproduction of essential oil and medicinal plants; creation and support of a gene fund of 216 sorts, presented by 547 samples, 161 essential oil and medical plants varieties; technology development for essential oil and

chemical analysis, irrigation, alternative agriculture systems, mechanization of the working processes, ecological systems for plant protection etc. ensuring stable and competitive development of agriculture are determined; the Fruit Production Institute, the Institute of Fishery and Aquaculture, the Institute of Tobacco and Tobacco products.

Biology, chemistry, physics and mathematics sections members come mainly from the Plovdiv University "P. Hilendarsky" where they lecture in the faculties of biology, economics and social sciences, mathematics and informatics, pedagogy, languages and literature, chemistry, law, philosophy and history.

Rousse

Rousse branch is one of the big and important units in USB structure. It has developed more than 10 sections with specialists in machine building technology, electronics and electro technology, transportation, agriculture, economics, human medicine, veterinary medicine and several ones in social sciences.

Many of the members work at the "A. Karanchev" **University of Rousse** lecturing in environment protection: water preservation, waists; noise, combustible gases, bio fuels; GPS systems. The University offers education in Agricultural mechanisation (departments in Agricultural machinery, Repairing and reliability, Theory of mechanisms and machines and Material handling engineering and technologies, Ecology and environmental protection, Industrial design, Thermotechnics, hydro- and pneumotechnics); Mechanical and manufacturing engineering; Electrical and electronic engineering and automation; Automotive and transport engineering; Business and management; Natural science and education; Law studies; Kinesiterapy and occupational therapy. The tradition and the geographical location of the University determine its strategic role of an educational, scientific and intellectual centre of North-East Bulgaria on both the national and the international levels.

Specialists in agriculture are affiliated to the **Rousse branch of the College of Agriculture Plovdiv** (see Plovdiv branch) where they practice agriculture processes mechanization and selection; to the Agricultural, Forest machinery and Spare parts Test centre - Rousse. The Centre is a specialized unit within the structure of the Ministry of agriculture and foods. Its main function is to register and control agricultural machinery according to national regulations. It has modern measuring and computing machinery, as well as highly skilled experts. The func-

publishes empirical research and theoretical articles in all scientific disciplines plus article in science policy, higher education, international scientific cooperation, popularization of the activities of European and Bulgarian institutions. It gains in popularity every year. Other traditional publication is the HomoSciens – yearly newspaper which presents eminent Bulgarian scientists. Books on scientific studies, reviews, volumes of congress/conference proceedings, brochures are constantly being published.

- **Competition for best scientific achievements.** Every year the USB announces this competition. Researchers - individual members of the USB or juridical bodies - members of the USB, can be nominated. Researchers are divided in two groups - up to and above 35 years of age and participate with works that have been published during the last two years in six research areas - natural, technical, biological and medical sciences, agriculture, humanitarian and social sciences. All researchers admitted for nomination in the competition receive a certificate for participation. The winners receive a diploma and a material award. Special competition for young scientists up to 35 is also yearly organized. The awards are traditionally presented on the eve of 1st of November - the Day of the Bulgarian revival leaders and Bulgarian scientists.

- **Honors.** For their research or active union development contributions, USB members can be awarded the Honorary Sign, the Certificate with badge, or the Honorary membership. The Honorary sign is bestowed to leading Bulgarian or foreign researchers nationally or internationally recognized, who maintain beneficial contacts with units or members of the Union. The Certificate is awarded to sections, branches or other USB units, to higher schools and research organizations, business or trade juridical bodies for permanent assistance or contribution to USB or its units. The Certificate can be awarded also to physical persons - governmental, civil or business related, who have actively contributed to the expansion of Union activities.

- **Contacts and cooperation agreements** with main Bulgarian research and high education institutions and non-governmental organizations. USB has signed agreements for collaboration and cooperation with the Bulgarian Academy of Sciences, the National Agency for Assessment and Accreditation, the Bulgarian Medical Doctor's Union, the Federation of Scientific and Technical Unions, the Agency for Bulgarians Living Abroad and a number of others.

- **Joint activities with foreign cultural and scientific bodies** in Bulgaria - Austrian Science and Research Liaison Centre in Sofia, French Cultural-Information Centre, British Council Bulgaria.
- **Bilateral and international contacts** and cooperation agreements with foreign partner organizations.
- **Membership in European scientific societies.** Through its sections, USB maintains membership in the Federation of European Microbiological Societies, Federation of European Biochemical Societies, Föderation of European Societies of Plant Biology, European Committee on Illumination, European Union of Science Events Organizers and International Union of Immunological Societies.
- **International home of scientists** "Frederick Joliot-Curie". This is the first conference centre in Bulgaria, built in "St. Constantine and Elena" resort in 1968 and operated by the Union of scientists in Bulgaria to host scientific conferences and meetings and as a recreation complex for members and guests. The complex can accommodate a gathering of up to 300 participants, or several smaller simultaneous meetings. Full standard audio-visual equipment is available. The hotel features 100 rooms. Restaurant and refreshment facilities are available. This is a favorite place for vacation for Union members and the connoisseur.

MEMBERSHIP

- The membership in the USB is voluntary. Members can be physical or juridical persons.
- Every physical person - Bulgarian or foreign citizen, who owns a scientific degree and/or scientific title, or is a higher University graduate and performs or has performed till his retirement science research and/or lecturing, can become member of the USB.
 - Juridical bodies can become members of USB if they are unions, societies, associations, higher schools, research institutes, clubs and other civil organizations, whose staff consists of researchers and higher education specialists, and which are non-governmental and democratic in character and their aims do not contradict to the Statute of the USB. Members can be organizations, centers, institutes, foundations etc. whose areas of activity are science and higher education, as well as those actively assisting and encouraging the development of science and education.
 - PhD graduates, specialists and students related to the

Plovdiv

The Plovdiv branch is the biggest among union branches and has its own building - a cultural heritage house from the Renaissance period with meeting facilities - a favourite place for members. Plovdiv branch members are organized in several scientific sections (listed according to the number of members): medicine, technical sciences, agriculture, biology, chemistry, physics, mathematics, biochemistry and biophysics and a few humanitarian specialties.

Medical specialists work in **Plovdiv Medical University** and cover fundamental and clinical medicine, stomatology, pharmacy, healthcare management. Technical scientists work mainly at the **Technical University Plovdiv**, the **Plovdiv University "P. Hilendarsky"** and the **University of Food Technologies**. The mission of the UFT is to offer solutions to problems concerning the development of the food and flavour industries, biotechnological industry, catering and tourism and the related industrial management, economics of food industries, heat engineering, computer systems and technologies, machine and instrument building and automation of production. Some of the chairs deals with technologies for the production of wine, milk and milk products, fruits and vegetables, tobacco, plant fats, soaps and etheric oils, non-organic and organic chemistry, mathematics, machine building technologies.

Agriculture members come from the **Agricultural University Plovdiv**, with faculties and specialties in agronomy, plant biotechnologies, animal breeding, viticulture and horticulture, tropical and subtropical agriculture, hydro meliorations, agricultural engineering, plant protection, agro ecology, organic farming, economics; the **College of Agriculture** with majors in agro-technologies and farming, technologies in horticulture and wine-production, economics of tourism and agrarian economics; and several institutes such as **Vegetable Crops Research Institute** working on breeding of vegetable crops and variety maintenance, especially in tomatoes, pepper, potatoes, cucumbers, onion, cabbage, green peas and garden bean using the classical methods (selection, interspecific hybridization, intervarietal hybridization, inbreeding, backcross etc.) as well as more modern in vitro methods - embryogenesis, androgenesis. The basic direction of the scientific investigations is the creation of high yielding, high qualitative varieties possessing improved adaptability, resistance to biotic, abiotic and anthropogenic factors. In the field of technologies the institute investigates the crop rotation, soil cultivation, plant nutrition based on an agro-

specialties, treats emergency cases, performs highly specialized analysis and tests as well as consultations. The **Pleven Medical University** is one of the five medical universities in Bulgaria with high prestige. Today, it incorporates educational and therapeutic facilities, contemporary pre-clinical base, Institute hospital with more than 1000 beds with clinics in all major medical fields, as well as a large number of specialized clinics and research units with modern diagnostic and therapeutic equipment. These are efficiently used to treat patients, train students, trainee doctors, post-graduates and for research work. Education is carried out in the five faculties which are Medicine, Public health, Healthcare, the Medical college and Languages and specialized training.

A unique for the USB structure section in "Aviation" has been set up in Pleven. The members are lecturers at the **Aviation Faculty of the National Military University "V. Levski"** (with headquarters in Veliko Tarnovo) in fields such as Aviation and space technology, Aerohydrodynamics, flight safety and aircraft guidance, Military sciences and navigation, Geo-Information systems and remote methods for earth and space research and several other.

The agrobiology section consists of specialists in fodder on the staff of the **Institute of Forage Crops Pleven**. The establishment is a national centre for complex applied scientific research and development activities, advice and training in forage crop breeding and technology and ruminant nutrition. It is a scientific unit of the Agricultural Academy. Main research directions include: Breeding and seed production of forage crops; Technology and ecology of forage crops and Forage preservation, quality evaluation and utilization.

Another unique section is the "Viticulture and enology". Members come from the **Institute of Viticulture and Enology**, which is the only research and applied institution in Bulgaria studying raisin growth and vine production. The institute has a 106 years history, has compiled and supports the biggest ampelographic collection on the Balkans with 1865 sorts' names and genetic resources. It has created technologies for production of certified raisin planting material and vine, including ecologically pure output.

The remaining members are structured in the sections of "History and archeology", "Philology" and "Mathematics" and are part of the Regional history museum, the Medical University and other bodies.

research and lecturing process can become associate members of USB following a simplified procedure.

MANAGEMENT

The supreme governing body of the USB is the **General Assembly (GA)**. GA consists of representatives of the Union members, elected according to quotas. GA is convened at least once per year. Between GA meetings the USB is managed by the **Governing Board** which defines the strategy and controls USB activities. Governing Board members are elected for a mandate of 4 years. A system of permanent **all-Union bodies** is set up to assist the overall direction of the USB: Committee for Best Research Achievements, Committee for Scientific Events and International Relations, Committee for Social Protection of Members, Committee for Young Researchers, "Nauka" Magazine Editorial Board.

The **President** of the USB is representing the organization and fulfils its management following the GAP and the Governing Board decisions.

CONTACTS

Union of Scientists in Bulgaria
39, Madrid Blvd.
Sofia 1505
Bulgaria
e-mails: president@usb-bg.org; angelova@usb-bg.org;
science@usb-bg.org
tel.: 00 359 2 943 01 28; 00 359 2 944 11 57
fax: 00 359 2 944 15 90
<http://www.usb-bg.org>

SECTIONS. RESEARCH AND LECTURING CAPACITY

The purpose of this brochure is to try to present the capacity of the Union of scientists in Bulgaria in research and lecturing activities in natural sciences, engineering sciences, biological and medical sciences, agriculture and some interdisciplinary areas.

Social sciences, humanities and arts have been excluded from the present review, since they have been considered of no interest for the purpose of this material, although they present a significant part of the Union's strengths.

Below are reviewed the scientific sections of USB from the point of view of the members' expertise, the institutions they work in and the specific research and lecturing fields they cover.

62% of USB members in the capital are academicians, Academy of sciences corresponding members, professors, senior researchers and associate professors. 38% are assistant professors, junior researchers and specialists. Members usually occupy high positions in the administrative and research hierarchy. Age statistics show that young scientists above 35 years are only 6,2% of the members, between 35 and 65 - 45,8% and above 65 - 48%.

Hereafter is a description of 17 out of 24 sections by alphabetical order.

Agrobiology

The Agrobiology section members come mainly from the Institute of Soil Sciences and the Agrobiology Institute. They work in the areas of soil genesis, geography and classification; soil chemistry; soil physics; soil microbiology; farming systems and mathematical modelling; agrochemistry and fertilisation.

The **Institute of Soil Science "Nikola Poushkarov"** is a research institute within the structure of Agricultural Academy, developing scientific, applied and extension service activities in the field of soil science, agro ecology, agriculture and environmental protection, performs also teaching, consultancy, design and economics.

The **Agrobiology Institute** main activities include: biotic stress in plants; abiotic stress - mechanisms of tolerance and model plants studies; plant genetic resources; genomics of agriculture plants; plants and metabolites; biodiversity; gene cloning and expression; DNA marker systems and bioinformatics. Services and support activities are also offered for production of pre-basic planting material; analysis of plant health status; feed and food

bean cultures and agro technology including specialized laboratories and the other - plant and animal breed production. The institute has created several main sorts of wheat, barley, beans, lentils, green beans, and sunflower as well as has elaborated techniques to grow these cultures in the country. Another institution with union members is the **Dobrudja College of Technology Dobrich** where students are trained in machines and technology in agriculture and in electronic equipment and automation.

Other members are lecturers at the Dobrich branch of **Shoumen University** in different specialties such as informatics and information technologies, primary education, plant protection; some work at the Dobrich history museum collecting, studying and preserving historical documents and national heritage monuments of the region.

Kyustendil

Kyustendil is a small branch which has developed three scientific sections: agriculture, history and varia. The agriculture specialists work at the Institute of Agriculture - Kyustendil which is in the structure of the Agricultural Academy and is a specialized departmental research institution for investigation of theoretical and practical problems in agriculture, and assistance to farmers. The research is carried in four main departments: Breeding, cultivar studies and reproduction of fruit trees; Agro technology, Physiology and Economics; Plant protection and Berry Breeding and Technologies. USB members are part of the staff of the institute and make research in extending and enriching of the available gene-stock of sweet cherry, sour cherry, apple, pear, plum, table grape and rootstocks for these species; distances and schemes of planting, pruning and orchard trees shaping; systems for soil management; soil microbiology, fertilization and irrigation; virus diseases; physiology and agrarian economics or serve in the National service for advice in agriculture.

Pleven

The Pleven branch is one of the big branches of USB. The town is located in central Bulgaria and has several research and education establishments. Members are structured in eight sections and are specialists in a variety of fields.

Leads in number the Medical sciences section whose members practice and lecture at the **University multi-profile hospital "Dr. G. Stransky"** or at the Pleven Medical University. The hospital carries out diagnostics and treatment of patients in all medical

protection, Veterinary medicine, Agronomy, Plant Protection and Management. It is a leading training and research centre in management and sustainable use of natural resources. Union members here come from the Veterinary medicine and zoogeingering departments.

The **Institute of Biology and Immunology of Reproduction** at the Bulgarian Academy of Sciences conducts fundamental and applied studies on reproduction in human and animals, studies the factors and mechanisms involved in gametogenesis, fertilization, implantation and pregnancy and the processes of autoreactivity and autoimmune response in reproduction, as well as the role of biomolecules and metabolic processes for storage and cryopreservation of reproductive tissues and cells. Works also on the development of biotechnological approaches for artificial insemination, micromanipulations and embryo transfer in animals. USB members work in the following department: Immunobiology of reproduction; Reproductive biotechnologies and cryobiology of gametes; Embryobiotechnologies in animals; Molecular immunology and immunoneuroendocrinology.

The **Institute for Animal Breeding - Kostinbrod** is part of the Agricultural Academy. It performs studies and has the function of methodological centre for Bulgarian animal breeding sector. For this purpose it has its own experimental laboratories and fields. The areas it is working in are: animal genetics, nutrition and technology of fodder; animal biochemistry and physiology; quality of animal production; sheep and bull breeding; reproduction; poultry breeding.

BRANCHES. RESEARCH AND LECTURING CAPACITY

A selection of USB branches and their capacity is presented hereafter. in alphabetical order. It includes 8 of the 25 branches in the country in towns that have larger research and lecturing capacities and big research and educational establishments. Potential was sought mainly in agriculture, medical and biological sciences, medicine and natural sciences.

Dobrich

The Dobrich branch is situated in the north-east part of the country. Its members are structured in 4 scientific sections: agrobiology, medicine, humanities and technical sciences.

Agrobiology is the biggest one and includes members affiliated to **Dobruja Agricultural Institute**. The institute works in two main directions. One is research in crop cultures, sunflower selection,

quality evaluation by NIRS; ISKRA2 information system for dairy cattle; DNA marker systems - genetic authenticity, seed homogeneity; DNA sequencing and fragment analysis and analysis of metabolites: GC-MS.

Biochemistry, Biophysics and Molecular Biology

As the name of the section suggests, USB members' working institutions are mainly institutes of the Bulgarian Academy of Sciences in the field of biophysics, biochemistry and molecular biology and the Faculty of Biology of Sofia University.

The **Institute of Biophysics and Biomedical Engineering** is a leading research institute in the fields of biophysics, biochemistry, cellular biology, motor control and muscle electrophysiology. Main topics of research include the molecular structure, metabolism and functions of biological membranes, excitable and photo excitable membranes, ion channels, bio potentials and extra cellular electric fields, conformation and function of proteins. The basic research is closely associated with various biomedical problems such as material biocompatibility, disorders in the motor control and lung surfactant systems, pharmacological methods, etc.

The **Institute of Molecular Biology** is the main institution in the country established to carrying out research and training in the field of molecular biology and biochemistry. Specifically, studies are performed in the following departments: Gene Regulations, Molecular biology of cell cycle, Structure and function of chromatin, Biochemical pharmacology and drug design. The institute operates a Laboratory for Yeast Molecular Genetics and for Medical and Biological Research. Cutting-edge research programs are developed to address significant physiological and patho-physiological mechanisms and maintenance of an active linkage between basic and clinical investigators with research programs in atherosclerosis, cardiovascular biology, diabetes, cancer and nanotechnology. A few members come from the **Institute of Plant Physiology and Genetics** who work mostly in the field of biology and molecular genetics, agronomy and plant protection, selection of and seeds production.

The institutes of experimental morphology, pathology and anthropology, of microbiology, of biology and immunology of reproduction, of organic chemistry with phytochemistry centre also contribute to our membership.

The **Biological faculty of Sofia University** is the working place of several USB members lecturing in the fields of molecular

biology and biochemistry, cell biology and pathology, genetic and cell engineering, biochemistry of microorganisms etc. A few members are from medical universities of Sofia and Varna, the Plovdiv University, the Forestry University and from pharmacological companies.

Biology section members work mainly at the **Institute of Biodiversity and Ecosystem Research** at the Bulgarian Academy of Sciences. IBER carries out research in theoretical and applied aspects of ecology, biodiversity, environmental conservation and sustainable use of biological resources with highly qualified staff in the areas of botany, mycology, zoology, ecology, hydrobiology, conservation biology, environmental genetic, evolutionary biology and sylvial.

Priority research trends are: Structure and functioning of biotic communities, ecosystems and landscapes; Diversity of organisms and their ecological and evolutionary relationships on all levels; Origin, development history and dynamics of biota and its components: flora, mycota and fauna; Scientific basis for conservation of living nature: identifying of threats and developing of methods for their removing or limiting; Approaches and methods for sustainable management of protected nature objects; Approaches and methods for sustainable management of biological resources, incl. studies on resource importance of species and communities not used before; Ecology and biology of species of economical and social importance, incl. approaches and methods for assessment; limiting the impact and regulation of density of invasive species, pests, parasites and other organisms of importance to medicine, nature protection, agriculture, forestry, fishery, hunting, managements of bio-resources and other human activities; Scientific basis of ecological risk assessment; the quality of environment and impact on it, elaboration of approaches and methods for biodiversity assessment, bio-monitoring and safety systems.

USB members in IBER work in the fields of parasitology and helminthology, biology, botany, plant physiology, hydrobiology, ichthyology and fish breeding, plant biotechnologies, environment and ecosystems protection, zoology of invertebrates etc.

The **Biological faculty of Sofia University** is the working place of several members - lecturers in cell biology, biotechnology, zoology and biochemistry and physiology.

A few members come from other Academy of sciences' institutes and from the **Agrobiolinstitute**. Several work at the

and processing; Optimization and decision making; Signal processing and pattern recognition; Information processes and systems; Intelligent systems; Embedded intelligent technologies; Communication systems and services; Hierarchical systems.

The **Institute of Metal Science, Equipment and Technologies'** main priorities are: study of behaviour of newly created metal alloys in terms of static, dynamic and altering loading; development of methods for assessing the remaining resource of hazardous facilities; creation of new high-tech equipment and protective systems that ensure national security and contribute to strengthening European security; creation of new nano-and special materials, composites and technologies for their production; hydro and aerodynamic design optimization of vehicles, drilling platforms, simulation and modelling research on the qualities of ships, simulation studies the properties of the vessels using a simulator systems; identification of hydrodynamic and aerodynamic efficiency of renewable energy sources. The **Space and Solar-terrestrial Research Institute's** mission is to conduct fundamental and applied studies in the field of space physics, remote sensing of the Earth and planets, and aerospace systems and technologies.

USB members work also at the Institute of meteorology and hydrology as hydrologists, meteorologists, research scientists, observers, etc. The institute is also mentioned under the section of Physics.

Several members come from Bulgarian telecommunications operators, municipalities and private companies.

Worth mentioning is that part of the section members are retired scientists - machine construction engineers, geodesists, water supply and hydro-engineers, environmental protection technologists, metallurgists, production processes automation specialists etc.

Veterinary Medicine and Animal Breeding

USB members perform research and applied studies and lecturing at the University of Forestry, at the Institute of Biology and Immunology of Reproduction, at the Animal Breeding Institute - Koslinbrod and a number of other institutions.

The **University of Forestry** is the only university in Bulgaria providing training of specialists in the field of Forestry, Wood technology and furniture production, Engineering design of furniture and Landscape architecture. The University also provides training of specialists in Ecology and environmental

the most complicated to analyze since its is composed of many different specialists and experts coming from more than 23 institutes, universities, academies, state, municipal and private companies, museums and press agencies.

First ranks the **Mining and Geology University** where our members are mostly lecturers in the area of mines' economics and management, mining technologies and electro mechanics. More information on this University is available under the **Geology and Geography sciences**. Second is the **Technical University Sofia** where USB members are lecturers in the areas of electro engineering, electronics, computer technologies,

technical cybernetics, radio physics, computing technologies, telecommunication technologies, organization and management of production. TU is a major educational research and production complex offering highly qualified trainers, engineers and technical staff, with modern laboratory facilities and considerable capacities for experimentation and production. The **Technical University Sofia** is the largest higher engineering school in Bulgaria with long years of experience in training engineers. Contemporary engineering trends in mechanical and electrical engineering, electronics, power generation, transport, automation, computer science and telecommunications, textile engineering, industrial management are taught at the **Technical University**.

Third place takes the **University of Architecture, Construction and Geodesy** where our members train specialists in water supply and sewerage, industrial and civil construction technologies, electro technologies and automatization.

Other universities also have USB members - **New Bulgarian University, Forestry University, Military Academy, the College of telecommunications and post higher school, Libraries information technologies college, Agricultural Academy, Higher school of civil engineering**, etc.

Further are ranked several institutes of the Bulgarian Academy of Sciences - **Institute of Information and Communication Technologies, Institute of Metal Science, Equipment and Technologies, Space and Solar-terrestrial Research Institute, National Institute of Meteorology and Hydrology** etc.

The **Institute of Information and Communication Technologies** research is in the following directions: Computer networks and architectures; Parallel algorithms; Scientific computations; Mathematical methods for sensor data processing; Linguistic modelling; Information technologies for security; Grid technologies and applications; Technologies for knowledge management

Natural history museum as responsible for plant department and specialists in biology and ecology.

Biomedical engineering

The section has all its members working at the former **Central Laboratory for Biomedical Engineering**, now merged with the **Institute of Biophysics**. The main areas of research are analysis and processing of biomedical signals and data, analysis and modeling excitability of biological structures, biomedical informatics, molecular modeling and modeling and optimization of bioprocess systems.

Chemistry and Pharmacy

This is one of the big sections of the Union. Members are non-organic and organic, physical, and analytical chemists, engineers in chemistry, in metallurgy, specialists in polymers, in chemical technologies of organic synthesis, of wood processing, of plant fats and ether oil, in spectroscopy, in semi-conductor materials and technologies, in silicate technologies, in electronics and so on. They are affiliated to the **Faculty of Chemistry of Sofia University**, where they lecture in the departments of inorganic, analytical, organic and physical chemistry as well as in applied fields and chemical engineering.

A significant number work at the **Bulgarian Academy of Sciences** institutes of general and inorganic chemistry, of organic chemistry and phytochemistry, of physical chemistry, the institutes for polymers and for catalysis.

Union members are also to be found at the **University of Chemical Technology and Metallurgy** as lecturers in semiconductor materials and technologies, in silicate technologies, in electronic engineering, in chemical engineering etc.; at the **Technical University Sofia** as well as in some private enterprises for plant fats and ether oil production.

Forestry sciences

All USB members of "Forestry sciences" section come from the **Forest Research Institute** at the Bulgarian Academy of Sciences. The main scientific fields of the Institute are biodiversity in the forests and methods for its conservation in situ and ex situ; climate changes and their influence on forests; structure and functioning of forest ecosystems; forest genetic resources; somatic embryogenesis; biological and integrated methods and means against diseases, insects and other pests in the forests;

ecology of the game resources and methods and technologies for reproduction and usage of wood resources.

Our members are specialists in forest economy and management, mechanization of wood production and transportation, forest ecology, selection and production of seeds, soil chemistry.

Genetics

The section of Genetics has almost all its members from the **Institute of Plant Physiology and Genetics** at the Bulgarian Academy of sciences who work mostly in the field of biology and molecular genetics; agronomy and plant protection, selection of and seeds production.

Geology and Geography

Members of this section work in Geology and Geophysical Institutes of the Bulgarian Academy of Sciences; they are lecturers in the Faculty of Geology and Geography at Sofia University "St. Kliment Ohridski" and at the University of Mining and Geology; consultants and experts in state an private companies.

The research activities of the **Geology Institute** include fundamental and applied problems in the main branches of the geological knowledge: palaeontology, stratigraphy, sedimentology, geotectonics; regional geology; petrology; geochemistry; mineralogy; mineral deposits; hydrogeology; engineering geology and geoeology.

The **Geophysical Institute** carries out fundamental and applied research in the fields of physics of the solid earth - seismology; geomagnetism and gravimetry; physics of the earth's environment - atmosphere, ionosphere; protection of the population and risk mitigation of unfavorable natural phenomena and disasters; facilitating sustainable development and use of the natural and raw-material resources in Bulgaria; registration, processing, analysis and interpretation of the seismicity, geomagnetic field, the status of the ionosphere and UV radiation level above the country and surrounding lands.

The **Faculty of Geology and Geography at Sofia University** "St. Kliment Ohridski" is one of the main national establishments providing education and research in the fields of geology and geography in Bulgaria in the following areas: geography of tourism; geology and paleontology; mineralogy; petrology; ores and minerals; regional and political geography; social and economics geography; landscape sciences and environmental

physics, structure and properties of crystals and amorphous materials, atom and plasma physics, high precision thermometers, integrated optics, optical fibres, acoustoelectric and microelectronic sensors, metal vapour lasers.

The **Institute for Nuclear Research and Nuclear Energy** is the leading complex center for research and application of nuclear physics in Bulgaria. The scientific and applied investigations carried out are connected with the milestone problems of Bulgaria. Traditional scientific areas include: Theory of the elementary particles, string theory, theory of atomic nuclei, soliton interactions and quantum phenomena; Experimental physics of the elementary particles, nuclear reactions, structure of atomic nuclei, cosmic rays and gamma-astrophysics at ultra high energies; High energy physics; Neutron interactions and cross sections, physics of the fission; Reactor physics, nuclear energy and nuclear safety and security; Dosimetry and radiation safety; Monitoring and management of the environment, radioecology; Radiochemistry, high precision analyses of substances; development and production of radioactive sources; Nuclear and neutron methods for investigations of substances and Nuclear instrument design and production.

The **Institute for Meteorology and Hydrology** which for more than 134 years now has given its humble information and scientific contribution to the mastering and studying of the problems related to the climate change, weather and water resources. The institute is a highly valued centre for weather forecasts in all spheres of economy, agriculture and civil life.

The **Institute of Electronics** conducts research and education as well as dissemination of scientific knowledge in the fields of physical electronics, photonics and quantum electronics as well as radio sciences.

The **Institute of Astronomy** and National Astronomical Observatory carries out fundamental research in astronomy and astrophysics, as well as education of specialists and graduate students in this area. The Institute operates two modern observatories for astronomical observations and research - National Astronomical Observatory Rozhen and Astronomical Observatory Belogradchik.

A few members are lecturers at the Physical faculty of Sofia University and the Physics Department of the Technical University Sofia.

Technical sciences

The bigger section of the USB "Technical sciences" section is

	<p>University.</p> <p>The section includes also specialists in stomatology and pharmacology, mainly working in the Medical Academy specialized faculties.</p> <p>A considerable number of the members are retired scientists covering almost all medical fields.</p>
<i>Microbiology</i>	<p>The Microbiology section unifies members from different research fields and applied sectors. A number of them come from the Institute of Microbiology of the Bulgarian Academy of Sciences where studies in the area of general, applied and infectious microbiology, virology, immunology and mycology are carried out. More specifically they work on cell biology and pathology; biotechnology incl: industrial, biochemistry and microbiology and other microbiological fields.</p> <p>Other members work at the Plant Protection Institute which is part of the Agricultural Academy. At present, the institute performs studies in seven main scientific fields: biological and integrated pest control; virology; entomology and radiobiology; quarantine; toxicology; phytopathology and plant immunity and herbiology.</p> <p>A few members - microbiologists are lecturers at the Department of Biochemistry and Microbiology of New Bulgarian University and the University of Forestry, others work in "safety of foods" department at the National Veterinary medicine Diagnostics Research Centre, in the National Centre for Contagious and Parasitic Diseases, in the Institute of Soil Science "Nikola Poushkarov", in medical universities and hospitals.</p>
<i>Physics</i>	<p>Members of this section are affiliated to several Bulgarian Academy of Sciences institutes. The Institute of Solid State Physics carries our research in condensed matter physics, optics, spectroscopy and laser physics; application of this knowledge for the creation of new materials, devices and analytical methods for micro- and nano-technologies, as well as for new approaches in the interdisciplinary fields of the physics with biology, medicine, archaeology; transfer of the achieved results to the economy of Bulgaria. The main scientific and applied achievements are in the field of condensed matter theory, critical phenomena and phase transitions, superconductivity and superconducting materials, low temperature physics, nanophysics, liquid crystal physics, soft and living matter</p>

	<p>protection, geomorphology, cartography and climate sciences and hydrology.</p> <p>The University of Mining and Geology is an academic and research centre that provides training in the spheres of geology, in mining and electrical and mechanical engineering. It is an institution where fundamental and applied scientific research is carried out and general engineering education combined with a profiled knowledge and abilities acquired. Graduates are engineers in the areas of geology and mining, in power engineering, in civil engineering and industrial construction, in environmental protection, and other branches.</p>
<i>Immunology</i>	<p>The Immunology section is one of the medium size units of USB. Its members come mainly from the National Centre for Infectious and Parasitic Diseases as specialists in biochemistry and microbiology, gene and cell engineering, pathological anatomy and citopathology, immunochemistry etc. The NCIPD's main directions of studies are in Virology - on enteroviruses, viral hepatitis, measles, mumps and rubella, herpes virus, rickettsiae and chlamydiae, influenza and acute respiratory diseases, HIV / AIDS, arboviruses, molecular virology and retroviruses; in Microbiology - on mycology, enteric pathogens, streptococci and corynebacteria; biohazard level III infections, anaerobic infections, leptospira, borrelia, listeria, staphylococci and neisseriae, on molecular biology and tuberculosis; in Epidemiology and CD surveillance - on surveillance and early warning; in Immunology and Allergology where several laboratories work (on Allergology, Immunomorphology and Electrochemistry, Mucosal Immunity, Mediators of Immune Reactions); in Parasitology and tropical medicine with laboratory. The National Immunization and Consultative Center is with the centre.</p> <p>Other members come from several Medical hospitals' immunology chairs and laboratories, from Academy of Sciences Institute of Microbiology, Institute for Experimental Morphology, Pathology and Anthropology and Institute of Biology and Immunology or Reproduction as researchers in immunology, cell biology, biochemistry and microbiology, molecular biology etc.</p>
<i>Informatics</i>	<p>A quickly developing field, it includes specialists in computer systems and technologies, mathematical modeling and applied mathematics, radio electronics, system administration, informa-</p>

tion technologies, library sciences and communication, mass communication etc.

USB members work at Bulgarian Academy of Sciences Institute of Biophysics and Biomedical Engineering (see section Biochemistry), Institute of Information and Communication Technologies (see section Technical sciences), at University of Library and Communication Technologies, Burgas Free University, Technical University - Sofia Chair of Informatics (described under technical sciences section), University of National and World Economy, New Bulgarian University, College of Telecommunications and Post, Mining and Geology University, Sofia University Chair of Mathematics and Informatics, Air traffic administration.

Mathematics

It is a small section which affiliates members from Academy of Sciences' institutes and higher educational establishments in Sofia. Part of them work at the **Institute of Mathematics and Informatics**. The institute works mainly in three strategic research fields. These are mathematical structures with sub-fields in discrete mathematical structures and applications; differential equations; analysis, geometry and topology; in mathematical modeling; stochastic; operations research; numerical methods and scientific calculations; approximation theory and foundations of mathematical models; the second is mathematical informatics with subfield in mathematical foundations of informatics; mathematical linguistics and knowledge processing; modeling of software and cognitive processes; modeling of information processes and finally the third is in modeling of educational processes in mathematics and Informatics.

Faculty of Mathematics and Informatics at Sofia University is also employing union members of this section. They lecture in the departments of Algebra, Analytical mechanics, Complex analysis and topology, Computer Informatics, Computing systems, Differential equations, Education in mathematics and informatics, Geometry, Information technologies, Mathematical analysis, Mathematical logic and applications, Numerical methods and algorithms, Probability, operations research and statistics, Software technologies and Laboratory mathematical modeling in economics.

A few are employed in other higher establishments, in state agencies and private companies.

Mechanics

The section of Mechanics is one of the small USB units. Its members cover the specialties of construction, transport, machine and appliances engineers, applied mathematics, mathematical physics, atomic physics, optics and spectroscopy, mechanic systems in robotics, solid state mechanics, theory of probabilities which are working at the **Institute of Mechanics** at the Bulgarian Academy of Sciences. The Institute is a leading scientific center with long traditions in fundamental and applied research in mechanics, robotics, mechatronics, biomechanics and related fields. The Institute also participates in the training of Ph.D. students and qualified specialists, it is involved in innovation and expert activities, and practical application of research results. A few members work at Bulgarian Academy of Sciences **Institute of Biophysics and Biomedical Engineering** in the fields of automation and system technologies, biotechnologies and automation of industrial enterprises, at the **Institute of Molecular Biology** as mathematicians and at the **Institute of Physical Chemistry** as hydro engineers.

Medical science

One of the biggest sections in the Union, its members can be traced in the entire healthcare structure, but mainly they are affiliated with the **Medical Academy Sofia** and the medical universities as lecturers, researchers and doctors. The specialties they cover are obstetrics and gynecology, roentgenology, dermatology and dendrology, hematology, pediatrics, endocrinology, urology, neurology and psychiatry, physiology, pathology, neuroophthalmology, toxicology. In medical universities, for example **"Queen Jovanna ISUL" University hospital** USB has specialists in ophthalmology, stomach surgery, orthopedics and traumatology, gastroenterology, pediatrics, in others - Infectious diseases, endocrinology, orthopaedics and grammatology. Beside these, in Sofia there are several specialized hospitals such as the **Emergency hospital "Pirgov"** where USB members work as clinical toxicologists, neurosurgeons etc.; the National oncology centre, the Institute of orthopedics and traumatology and others for specific diseases with staff which are members of USB.

A few members work at other multiprofile hospitals, polyclinics, private health centres, at **Sofia University** and **New Bulgarian**