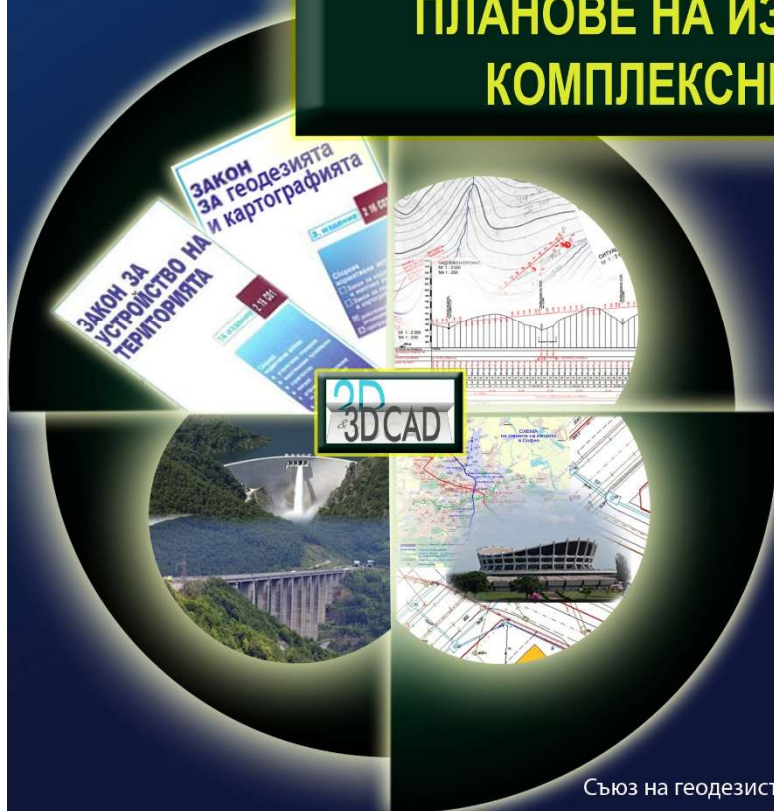


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Поч. проф. д-р инж. ИВО МИЛЕВ

ПРИЛОЖНА ГЕОДЕЗИЯ
Част 1
ИНЖЕНЕРНА ГЕОДЕЗИЯ

Книга 3 (3.2)
**ИЗГРАЖДАНЕ НА ЛИНЕЙНИ ОБЕКТИ,
СГРАДИ, СЪОРЪЖЕНИЯ И МОНТАЖ
НА ТЕХНОЛОГИЧНО ОБОРУДВАНЕ.
ПЛАНОВЕ НА ИЗГРАДЕНИТЕ
КОМПЛЕКСНИ ОБЕКТИ**



Съюз на геодезистите и земеустроителите в България
София, 2022 г.

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ПРИЛОЖНА ГЕОДЕЗИЯ

Част 1

ИНЖЕНЕРНА ГЕОДЕЗИЯ

«Наука требует от человека всей его жизни. И если бы у вас было бы две жизни, то их бы не хватило вам. Большого напряжения и великой страсти требует наука от человека»

Акад. Иван Петрович Павлов (1849-1936),
лауреат на Нобелова награда
<https://psichov.net/pavlov-ivan-petrovich/>

Книга 3(3.2)

ИЗГРАЖДАНЕ НА ЛИНЕЙНИ ОБЕКТИ, СГРАДИ, СЪОРЪЖЕНИЯ И МОНТАЖ НА ТЕХНОЛОГИЧНО ОБОРУВАНЕ. ПЛАНОВЕ НА ИЗГРАДЕНИТЕ КОМПЛЕКСНИ ОБЕКТИ

Съюз на геодезистите и земеустроителите в България
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Анотация

В книги 3, на част 1. Инженерна геодезия от Приложна геодезия, са разгледани същността, задачите и ролята на Инженерната геодезия при **проектирането, трасирането, изграждането и експлоатацията** на **конкретни типове** инженерни обекти – линейни обекти, сгради, съоръжения, и монтаж на технологично оборудване, планове, модели и информационни системи на изградените комплексни обекти и др.

Поради многостранността на третираните проблеми и големия обем на изложената материя, надхвърлящи 1500 компютърни страници, книга 3 е разделена на три книги – 3(3.1), 3(3.2) и 3 (3.3).

В книга 3(3.1) са изложени проектирането, строителството, експлоатацията и реконструкция на линейни обекти и особеностите в геодезическите работи при – железопътни линии, пътища, обекти на енергоснабдяването, съобщенията, водоснабдяване и канализация, въжени линии, както и на тунели и метрополитени.

В книга 3(3.2) са включени проблемите, свързани с проектирането, строителството и монтажа на съоръжения по други линейни обекти, напр. мостове, а също геодезическите методи и технологии, за трасирането и контролните измервания и изследването на деформациите им. Представени са още тези проблеми при, хидротехнически обекти, изградени самостоятелно или в комплекси от инженерни такива – язовири, каскади и др., както и хидромелиоративни обекти, корекции на реки, наводнения и засушавания, пристанища и речен транспорт.

В книга 3(3.3) е представено проучването, проектирането, трасирането и контролирането и изследване на деформациите при строителството, монтажа и експлоатацията на сгради, промишлени съоръжения и технологично оборудване, монтаж на машини с различно предназначение, също и обекти с гражданско предназначение – летища, спортни, високи съоръжения и др. По-нататък е представено съставянето на планове и моделирането на изградените обекти – BIM и кадастъра на комуникациите на комплекси от инженерни обекти и съответните информационни системи, респективно – Специализирани данни (модел) на подземните комуникации, както и други инженерни аспекти на приложение.

За **различните обекти**, в изложението 3(3.1), 3(3.2) и 3(3.3), най-напред се дава кратка, **специфична информация за тяхната същност, изграждане, изисквания, нормативна база и особености**. Така, наред с другото се използва **актуалната** инженерна информация и терминология и специалистите говорят на един език помежду си, още повече, че разглежданите проблеми са **интердисциплинарни**.

Структурата на книгите е оригинална. Изложението е в съответствие с възприетия начин на изложение в книги 1 и 2 на авторите, с действащата нормативна база и с възможностите, които предлагат съвременните дигитални апарати, инструменти, системи и технологии. Тя **отразява** в голяма степен вижданията, дългогодишните изследвания, преподавателски опит, участие в изграждането и изследването на деформациите на инженерни обекти, включително и на такива с оригинални пространствени конструктивни решения, реализирани с участие на авторите.

Книги (3.1), 3(3.2), 3(3.3) са предназначени за специалистите, работещи по изграждането (проучване, проектиране, строителство, монтаж) и експлоатацията на различни инженерни обекти и комплекси от тях. Също така и за преподавателите, докторантите, студентите от направление „Архитектура, строителство и геодезия“ и др. и за практикуващите специалисти в областта на строителството и инженерната геодезия, препоръчително заедно с книги 1 и 2.

Посвещаваме на Наталия Иванова Милева: – съпруга и майка.

Цялото издание от 5 книги {1, 2, и 3(3.1), 3(3.2), 3(3.3)} на Инженерна геодезия посвещаваме и на 150 годишнината на БАН.

Авторите

Рецензенти:

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доц. д-р инж. Венета Коцева
2. Доц. д-р инж. Тодор Костадинов
3. Доц. д-р инж. Лъчезар Хрисчев
4. Д-р инж. Иван Калчев Иванов.

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Предговор

Книга 3 **„Изграждане на линейни обекти, сгради, съоръжения и монтаж на технологично оборудване. Планове на изградените комплексни обекти“**, както вече се спомена, е оформена, като три отделни книги – 3(3.1), 3(3.2), 3(3.3).

Те са част от проекта **„Приложна геодезия“** на авторите, състоящ се от три части **1. Инженерна геодезия, 2. Природонаучен аспект на приложение на геодезията, 3. Други приложения на геодезията**. Трите заедно разглеждат всестраниното приложение на геодезията.

Част 1. **Инженерна геодезия**, която се издава под формата на книга 1 **„Основи, системи и технологии в Инженерната геодезия“** – 498 стр., и книга 2 **„Проектиране и приложение на устройствените и на генералните планове“** – 330 стр., които заедно с книга 3(3.1) **„Изграждане на линейни обекти, сгради, съоръжения и монтаж на технологично оборудване. Планове на изградените комплексни обекти“** – 524 стр., вече в дигитален вид се разпространяват от електронната книжарница [<http://Billio.bg>] и в аналогов вид в книжарниците на УАСГ, МГУ, строителната книжарница СЕК и др. Всъщност отпечатани са в издателство „Авангард“. **Издания са на Съюза на геодезистите и земеустроителите в България (Изд. № 978-619-90732), подкрепени от БАН и ИКИТ**. Там ще бъдат разпространявани и Книга 3(3.2) – 530 стр. и Книга 3(3.3) – 466 стр., носещи същото заглавие, както книга 3.1.

Основанието за обособяването на част от проблемите на Инженерната геодезия като книги 3(3.1), 3(3.2), 3(3.3), както вече се отбеляза, от една страна е: **големият обем** на материята по Инженерна геодезия; от друга **специфичността** и тематичното обособяване на проблематиката; направеното за първи път **обособяване, систематизиране, обобщаване и представяне** на съвременните постижения в тази област във вид на **системи, методи и технологии** (основен, неотменен елемент и предпоставка - теоретична и практическа, за по-нататъшното реализиране и при отделните конкретни инженерни обекти или комплекс от тях); **необходимостта** от по-обширно излагане на проблемите по проучването, проектирането, строителството, контрола и изследването на деформациите на конкретни обекти или комплекси от тях, налагаща се поради факта, че при тях възникват и трябва да бъдат решени от геодезистите много комплексни специфични проблеми. Примери и подробни обобщения за това, за съжаление, липсват или са малко в литературата. Информацията и опита за това, обаче според авторите, е много необходимо да бъдат систематизирани, обобщени и представени на геодезистите, тъй като опитът в инженерната геодезия е от изключително значение за решаването на проблемите; **големият кръг от специалисти**, работещи конкретно и то само в тази област. Не на последно място, с отделното ѝ издаване тя ще бъде **много по-бързо достъпна и удобна** за ползване. За това благоприятства и реализирането ѝ чрез съвременните възможности за **дигитално издаване и ползване**, включително и на мобилни устройства.

Изтъкнати бяха аргументи книга 3 да бъде отпечатана като три книги – книга 3(3.1), 3(3.2), 3(3.3).

Заедно с това обаче съществува планирана, непосредствена и неизбежна връзка на тук разглежданата материя и конкретната ѝ реализация с останалите две книги на Част 1. Инженерна геодезия 1 и 2. Има се предвид приложението при изграждането – проектирането, трасирането и контролирането по време на строителството, монтажа и експлоатацията на различните типове конкретни инженерни обекти и комплекси от тях. Това означава, че петте книги са едно, обособено органично цяло – Инженерна геодезия. Поради това цялата номерация на заглавия, фигури, таблици и др. са неразделна част - елемент от 1. Инженерна геодезия. Това обуславя също и включването на тази книга по-нататък в едно обединено дигитално издание като 1. Инженерна геодезия. Всъщност тя,

както се отбеляза, по замисъл бе включена като неразделна част от нея. Нещо, което не е правено в тази област и в световната литература.

В литературата, посветена на Инженерната геодезия, практически има малко цялостни, специализирани трудове, посветени изцяло на Инженерната геодезия. Не са малко обаче тези, които са посветени на конкретни приложения на Инженерната геодезия. Те, до голяма степен, заедно със съвременната нормативна база, разбира се, са намерили отражение в предлагания труд.

В книги 3, както и във вече издадените две книги – 1 и 2, е използвана десетичната система на номерация. Поради големия брой и голямата многостепенност на заглавията, за по-голяма прегледност и тук е приложено едно оригинално опростяване, като е въведено последователно четиристепенно десетично номериране, както във вече споменатите наши книги 1 и 2. То се изразява във въвеждането на традиционното четиристепенно номериране, като там, където то се налага да бъде надвишено, се въвежда ново, допълнително едно или две четиристепенни номерирания.

При книги 3 обаче, поради обособеността на третираните проблеми, се наложи отделните раздели да се **оформят самостоятелно** по отношение на **номерирането** на литературата, фигурите, таблиците и формулите, поради сложността и многоцифреността, която се явява при непрекъснатата номерация. Такъв проблем всъщност се появява тук, както при цитиране на заглавията на текстове, макар и не много често. Така, освен при приетото правило за цитиране от книга в книга, при петте книги, тук има и нови моменти за цитиране и от един в друг раздел на книги 3. Приема се пред цитирания номер на фигура, таблица, формула, литература да се поставя и номерът на раздела. Например при необходимост от цитиране на фиг. 56 от раздел 3.6 – мостове, в някой друг раздел, цитатът в другия раздел има вида фиг. 3.6-56: съответно, табл. 3.6-5, форм. 3.6-35, литературен източник [3.6-25]. Така идентичността се осигурява.

Авторите изказват благодарност на Съюз на геодезистите и земеустроителите в България за издаването на книгата под негова егида, както и за съдействието и подкрепата, оказана им при подготовката и реализирането на книгата. Благодарим и на **БАН и ИКИТ (книгите са качени на интернет страницата на Института)** за подкрепата. Благодарност изказваме и на **рецензентите**: чл.-кор. проф. д. а. н. д-р арх. Атанас Ковачев и на сърецензента доц. д-р инж. Венета Коцева {на нея допълнително и за прегледа и подобрене на част от ръкописа на книги 3(3.2)}, на доц. д-р инж. Тодор Костадинов и на д-р инж. Иван Калчев {книги 3(3.1), 3(3.2), 3(3.3)} и доц. д-р инж. Лъчезар Хрисчев {инж. строител, книги 3(3.2), 3(3.3)} за положителните рецензии на книгите и на маг. икон. Илиян Панчев за ефективното съдействие при решаване на проблеми по компютърната подготовка на книгите и също на доц. д-р инж. Христо Николов, за съдействието в това отношение. Още благодарности са изказани в отделни раздели от книгите и на други колеги, спомогнали за реализирането им, включително и на специалисти от УАСГ. Специална благодарност изказваме на проф. д-р инж. Керанка Василева за цялостния сравнителен преглед и предложенията ѝ за подобрене на книги 3(3.2) и 3(3.3).

Особена благодарност дължим на безрезервното и активно съдействие на инж. Кристина Гълбова за подготовката на таблици, формули и фигури за печат, за съставянето на индексите и др., както и на Светла Петрова и инж. Иванка Колева за изработването на корицата на книгата, на инж. Иванка Колева и за друга многостранна подкрепа, както и на инж. Катя Кръстева за превода на английски език на съответните части от книгите.

София, март, 2022 г.

Авторите

Annotation

Books 3 of Part 1, Engineering Surveying of Applied Geodesy, consider the nature, tasks and role of Engineering Surveying in the **design, tracing, construction and operation of specific types** of engineering objects – linear objects, buildings, facilities and installation of technological equipment, plans, models and information systems of built complex sites, etc.

Due to the versatility of the problems treated and the large volume of the matter discussed, exceeding 1500 computer pages, Book 3 is issued as three books – 3(3.1), 3(3.2) and 3(3.3).

Book 3(3.1) presents the design, construction, operation and reconstruction of linear objects and the specificities of geodetic works for railways, roads, objects of electric supply, communications, water supply and sewerage, cable-ways as well as tunnels and metro lines.

Book 3(3.2) includes the problems related to the design, construction and installation of facilities along other linear objects, e.g. bridges, as well as geodetic methods and technologies for tracing, control measurements and studies of their deformations. The same problems are also considered for hydrotechnical objects, built independently or in complexes of engineering ones – dams, cascades, etc., as well as hydro melioration objects, river corrections, floods and droughts and ports.

Book 3(3.3) presents the research, design, tracing and control and deformation studies during the construction, assembly and operation of buildings, industrial facilities and technological equipment, installation of machines for various purposes, as well as civil objects – airports, sport, high-rise objects, etc. Further on the composition of plans and modeling is shown for the built objects – BIM (Building Information Models) and the cadastre of communications of complexes of engineering objects and relevant information systems, respectively – Specialized Data (model) of underground communications, as well as other engineering aspects of application.

The exposition in 3(3.1), 3(3.2) and 3(3.3) provides first brief **specific information about the essence, construction, requirements, regulatory base and features of the various objects**. So, among other things, **up-to-date** engineering information and terminology are used and experts speak the same language, even more so that the problems addressed are **interdisciplinary** ones.

The book is with an original **structure**. The exposition is in conformity with the accepted way of presentation in Books 1 and 2 of the authors, with the current regulatory framework and the possibilities afforded by modern digital devices, instruments, systems and technologies. It **reflects** to a significant extent the views, years of research, teaching experience, involvement in the construction and study of deformations of engineering objects, including such with original spatial design solutions, implemented with the participation of the authors.

Books 3(3.1), 3(3.2) and 3(3.3) are intended for specialists working on construction (research, design, construction, installation) and operation of various engineering objects and complexes of them, as well as for lecturers, PhD students, students in the area of Architecture, Civil Engineering and Geodesy, etc., and for practitioners in the field of construction and engineering surveying, recommendably with books 1 and 2.

We dedicate to: Natalia Ivanova Mileva – wife and mother.

The entire edition of 5 books {1, 2 and 3(3.1), 3(3.2), 3(3.3)} of Engineering Surveying we also dedicate to the 150th Anniversary of the Bulgarian Academy of Sciences.

The authors

Reviewers:

1. Corr. Member Prof. D.Sc. Dr Arch. Atanas Kovachev,
Assoc. Prof. Dr Eng. Veneta Kotseva
1. Assoc. Prof. Dr Eng. Todor Kostadinov
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Preface

Book 3 “**Construction of linear objects, buildings, facilities and installation of technological equipment. Plans of the built complex objects**” is issued, as already mentioned, in three separate books – 3(3.1), 3(3.2) and 3(3.3).

They are part of the **Applied Geodesy** project of the authors, consisting of three parts: **1. Engineering Surveying, 2. Natural scientific aspect of Geodesy application, 3. Other applications of Geodesy.** The three together treat the versatile application of geodesy.

Part 1. **Engineering Surveying** is issued in the form of Book 1 **Basics, systems and technologies in Engineering Surveying** – 498 p., and Book 2 **Design and implementation of development and master (physical) plans** – 330 p., which together with **Book 3(3.1) Construction of linear objects, buildings, facilities and installation of technological equipment. Plans of the built complex objects** – 524 p., are already in digital form and are distributed by the electronic bookstore [<http://Biblio.bg>] and in an analog form by the bookstores of UACEG, UMG, SEK bookstore for building literature and others. They are issued by the Avangard Publishing House and are **editions** of the **Union of Surveyors and Land Managers in Bulgaria** (Ed. No 978-619-90732), supported by BAS and SRTI. Book 3 (3.2) - 530 pages and Book 3 (3.3) - 466 pages, bearing the same title as Book 3.1, will also be distributed there.

The reason for the separate publication of part of the problems of Engineering Surveying in books 3(3.1), 3(3.2), 3(3.3), as already mentioned, is on the one hand: the **large volume** of the materials on Engineering Surveying; and on the other hand the **specifics** and thematic distinguishing of the topics; the realized for the first time **differentiation, systematization, generalization and representation** of the modern achievements in this area in the form of **systems, methods and technologies** (a basic, indivisible element and a prerequisite – theoretical and practical, for the subsequent realization also of individual specific engineering objects or a complex of them); the **necessity** of broader presentation of the issues of research, design, construction, control and studies of the deformations of particular objects or complexes of them, due to the fact that many complex specific problems emerge and have to be solved by the surveyors. Unfortunately, there are a few or no examples and detailed generalizations for this in reference literature. However the authors consider that it is very useful to summarize the information and experience in this context and to present it to the surveyors, since the experience in engineering surveying is of extreme importance for solving the problems; and to the **broad circle of specialists**, working particularly only in this area. Last but not least, its separate publication will make it **much easier accessible** and **convenient** for use. This is also enhanced by its realization with the modern possibilities of **digital publication and use**, including with mobile devices.

Arguments have been pointed out for the publication of Book 3 as three books – books 3(3.1), 3(3.2), 3(3.3).

At the same time there is planned, immediate and inevitable connection between the matter treated here and its specific implementation and the other two books of Part 1. Engineering Surveying 1 and 2. The application during construction is implied – the design, tracing and control in the course of the building process, installation and operation of the different types of specific engineering objects and complexes of them. This means that the five books represent a whole, an integral organic entity – Engineering Surveying. Therefore the whole numbering of titles, figures and tables, etc., is an indivisible part – an element of 1. Engineering Surveying. This also determines the inclusion of this book further on in a unified digital edition as 1. Engineering Surveying. In fact, as already noted, it was intended to be included as an indivisible part of it. Something that has not been done so far in the world literature in this area.

In the literature devoted to Engineering Surveying there are actually a few comprehensive specialized works, dedicated entirely to Engineering Surveying. However, there are a lot of those dedicated to specific applications of Engineering Surveying. They have found to a large extent their place in the offered work, of course together with the modern regulatory base.

In Books 3, as well as in the already issued two books – 1 and 2, the **decimal numbering system** is used. Due to the large number of titles and their multiple stages, for the sake of clarity, an original simplification has been made here by introducing sequentially a four-stage numbering as in our previously mentioned Books 1 and 2. It consists in introducing the conventional four-stage numbering, applying if necessary, new additional one or two four-stage numbering in the cases, when it has to be exceeded.

In books 3 however, **the individual sections had to be formatted independently** in terms of **numbering** of reference literature, figures, tables and formulas due to the complexity and multifarious nature of continuous numbering. Such a problem actually arises here as with quoting text titles, although not quite often. So, except for the accepted rule for citing from one book to another, for the five books, new moments of citing appear here for quoting from one section to another in books 3. It is accepted to place the number of the section before the cited number of a figure, table, formula, reference literature. For example, if it is necessary to cite Fig. 56 of section 3.6 – bridges, in some other section, citing in the other section has the form Fig. 3.6-56, respectively Table 3.6-5, formula 3.6-35, reference literature source [3.6-25]). In this way the identity is ensured.

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Sofia, March, 2022

The authors

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Cor. Mem. Prof. Dr. Eng. Georgi Milev. Graduate of the University of Architecture, Civil Engineering and Geodesy (UACEG), Sofia (1956). In 1960 – Research Associate in the Bulgarian Academy of Sciences (BAS). In 1976 – Associate Professor, 1985 – Professor, 2008 – Cor. Mem. of BAS. Since 1988 – Cor. Mem. of the Bavarian Academy of Sciences, Germany. In 1973 – defended a PhD thesis in the Stuttgart University. Since 2001 – lectures to the students on Geodesy and Engineering Geodesy in UACEG, German lingual education.

The scope of his diverse and efficient activities is significant – scientific, applied research, scientific-organizational, educational, international, promotional, publishing, inventive, expert, scientific managerial and implementation. Basically, these activities were carried out in BAS, the Federation of Scientific Technical Unions in Bulgaria (FSTUB), the Union of Scientists in Bulgaria, UACEG and other institutions in Bulgaria and in international organizations and projects, mostly on an interdisciplinary ground.

The scientific activity of Prof. Milev covers both aspects of geodesy – natural and engineering. The number of his publications exceeds 580, of them 16 separate monographs, 9 studies, 5 books – each one of which is a system of monographs, 26 editing and publishing of scientific proceedings, 120 scientific papers, 243 scientific reports, etc. He was awarded by Stuttgart University for high scientific achievements of his thesis (1973).

Prof. Milev is honorary member of the International Federation of Surveyors (FIG), FSTUB and others. He had been a chairman of the Union of Surveyors and Land Managers in Bulgaria since 1990 for 24 years and later – its honorary chairman. He is Editor in chief of the Geodesy, Cartography and Land Management magazine since 1997. Member of BAS. Space research and Technologies Institute.



Honorary Prof. Dr. Eng. Ivo Milev graduated geodesy and mine surveying at the University of Mining and Geology, Sofia in 1991. He defended his PhD thesis in 2000 at the Technical University, Berlin – direction Construction and Geodesy.

He works in both aspects of geodesy – engineering and natural, but mainly in the area of Applied Geodesy – Engineering Surveying. This includes primarily the development of theory, software and application of adjustment – processing the results of geodetic measurements; GNSS – theory, software and application, alone and combined with data from other measurements; theory and software and application in the study of deformations of engineering objects – buildings and facilities, and the terrains for their situation; modern techniques of measurement – electronic tachometry, laser scanning and others, development, software and application. Special attention is paid to transport objects, particularly to railroad parameters. He has registered two patents associated with his name in implementing the system of the Leica Concern Geosystems.

He was: expert of UN – OOSA on reference systems; member of the Steering Committee of EUPOS (European Positioning Determination System); chairman of Working Group Private Services RTCM SC 104 (Radio Technical Commission for Maritime Services); guest professor at Beuth University of Applied Sciences in Berlin, East Kazakhstan Technical University, State Technical University of Kazakhstan and Siberian State Geodetic Academy.

Prof. Ivo Milev is a member of Working Group 4 Engineering Surveying of the Union of German Surveyors; Chairman of Commission 6 Engineering Geodesy of the International Federation of Surveyors for the period 2013-2017. He is an Executive Director of TechNet-rail GmbH. He is Honorary Prof. of the Siberian State Geodetic Academy, Russia and of the Technical University of Dresden, Germany.



Чл.-кор. проф. д-р инж. Георги Милев. Завършва Геодезия в Университета по архитектура, строителство и геодезия (УАСГ) през 1956 г., София. От 1960 г. е научен сътрудник в БАН. 1976 е доцент, 1985 – професор и 2008 – чл.-кор. на БАН, а 1988 е чл.-кор. на Баварската академия на науките, Германия. Защищава докторска дисертация в Щутгартския университет, през 1973 г. От 2001 г. до 2016 г. изнася лекции по Геодезия и Инженерна геодезия на студентите от УАСГ – немско езично обучение. Има значителна, разностранна и резултатна научна, научно-организационна, научно-приложна, педагогическа, международна, издателска, изобретателска, експертна, популяризаторска, научно-ръководна и внедрителска дейност.

Основно тя е извършвана в БАН, Федерация на научно-техническите съюзи (ФНТС), Съюз на учените в България, УАСГ и др. институции у нас и в международни организации и проекти, предимно на интердисциплинарна основа.

Научната му дейност покрива трите аспекта на Геодезията – природонаучен, инженерен, други. Има над 580 публикации, от които: монографии 16; система от монографии – 5 книги, студии – 9; учебници 5; редактиране и издаване на научни сборници – 27; научни статии – 120; научни доклади – 243 и др. Носител е на наградата на университет Щутгарт – за високи научни постижения в неговата дисертация (1973 г.). Награди на СУБ за монографии – 3.

Почетен член е на Международната федерация на геодезистите, на ФНТС и др. Председател е на Съюза на геодезистите и земеустроителите в България от 1990 г. в продължение на 24 г., след което е негов почетен председател. Главен редактор е на сп. “Геодезия, картография, земеустройство” от 1997 г. Член е на БАН, и е в Институт за космически изследвания и технологии.



Почетен проф. д-р инж. Иво Милев завършва Геодезия и Маркшайдерство в Минно геоложки университет, София, през 1991 г. Защищава дисертация през 2000 г. в Техническия университет Берлин – направление Строителство и геодезия.

Работи в двата основни аспекта на геодезията – инженерен и природонаучен, но предимно в Приложната геодезия – Инженерна геодезия. Основно това е развитие на теория, софтуер и приложение на изравнението – Обработка на резултатите от геодезическите измервания; GNSS – теория, софтуер и приложение, самостоятелно и комбинирано с данни от други измервания; теория и, софтуер и приложение при изследване на деформации на инженерни обекти – сгради, съоръжения и терените, в които те се разполагат; съвременна техника на измерване – електронна тахиметрия, лазерно сканиране, GNSS и др. – развитие, софтуер и приложение. Особено внимание е отделил на транспортните обекти и по-точно на параметрите на релсовия път. Има регистрирани два патента, свързан с неговото име при реализиране на системата от концерна Лайка Геосистемс.

Бил е: експерт на ООН – OOSA по референтните системи; член на ръководния комитет на EUPOS (EUropean Positioning Determination System); председател на работна група Private Services RTCM SC 104 (Radio Technical Commission for Maritime Services); гост проф. в Бойт Университета за приложни науки в Берлин; Източен Казахстански технически университет; Държавен технически университет на Казахстан, както и Сибирската държавна геодезическа Академия.

Член е на Работна група 4 „Инженерна геодезия“ на Съюз на германските геодезисти; Председател е на комисия 6 Инженерна геодезия на Международната федерация на геодезистите (International Federation of Surveyors) през периода 2013-2017 г. Изпълнителен директор е на technet-rail GmbH. Почетен професор е на Сибирската държавна геодезическа академия, Русия, и на Техническия университет в Дрезден, Германия.