



FACULTY OF SPECIAL ENGINEERING

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The Faculty of Special Engineering of the University of Žilina was transformed from the Military Faculty of the University of Žilina. The previous faculty was established in 1952 and, at this time the Faculty was constituted as the Railway Faculty and a part of the Military Technical University in Brno, the Czech Republic. In 1953 the Railway Faculty was relocated to the Railway University in Prague, the Czech Republic and renamed the Military Faculty. This Military Faculty was in 1959 transferred to Žilina and became a part of the newly established Technical University of Transport. Today's name of the university is the University of Žilina.

Under the authority of the Ministry of Transport, Posts and Telecommunications of the Slovak Republic, the Ministry of Education of the Slovak Republic, the Ministry of Defense of the Slovak Republic, the Accreditation Committee of the Government of the Slovak Republic and by acclamation of the Academic Senate of the University of Žilina, the Military Faculty was on 9th February 1998 renamed to the Faculty of Special Engineering of the University of Žilina.



The Departments of the Faculty:

- Department of Crisis Management,
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- Department of Fire Engineering,
Phone: +421-41-7633320, E-mail: olsar@fsi.utc.sk
- Department of Security Management,
Phone: +421-41-7633320, E-mail: reitspis@fsi.utc.sk
- Department of Technical Sciences and Informatics,
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- Department of Military Transport,
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- Off-campus Institute in Košice,
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The Department of Crisis Management is the main department to offer studies in the field of civil security. These studies are oriented and designed for solutions of crisis situations. They aim at various spheres of public administration, at business and finance, at social and environmental backgrounds.

The Department of Fire Engineering is the main department to offer studies in the field of fire protection. The studies are technologically oriented toward fire prevention and repressive activities, emergency tasks and work of fire brigades.

The Department of Security Management is the main department to offer studies in the field of security management. The studies are technologically oriented and are applied to the subjects of safety of persons and property and of object protection.

The Department of Technical Sciences and Informatics is an inter-sectional department and provides education for all the study programs, mainly in technical sciences, logistics, transport techniques and technology, informatics, automation, designing of engineering tasks, health safety and security of work.

The Department of Military Transport is the main department to offer studies in the field of military transport and military construction. Military studies will end their study programs in the year 2004.

Educational Activities

Educational programs and research tasks of the Faculty have managerial and technological orientation. Educational programs are oriented to the problem of:

- *risk and crises management applied in economy, public administration, transport and environment,*
- *solution of universal questions of national and public security,*
- *fire protection,*
- *rescue services,*
- *integrated systems of safety of objects and property,*
- *safety services and protection of objects of special importance,*
- *security information systems.*

The faculty offers the university education in all three levels of university education in these study branches:

- *Bachelor level:*
 - *Civil Security, specialization Security Management*
 - *Fire Protection*
- *Engineering level:*
 - *Civil Security*
 - *Civil Security, specialization Security Management*
 - *Fire Protection*
 - *Military Transport and Military Constructions*
- *Ph.D. level:*
 - *Military Transport and Military Constructions*
 - *Transport Machines and Equipment.*

The FSI offers different forms of lifelong education for officers working in government, public administration and in the fields of economy and social life.

The main aim of the FSI is to provide comprehensive theoretical and practical education, language skills and professional knowledge.

Currently FSI has 41 teachers, therefrom are five professors, 11 associate professors, 18 lecturers and seven assistants. The FSI employs four research workers and 15 clerks.

Tasks in educational activities

The goals of the FSI in the educational field for the near future are:

- *to prepare new study programs for accreditation,*
- *to make study programs more attractive,*
- *to offer new study subjects for students of other faculties of the University,*
- *to build special laboratories and to use new methods of e-learning.*

Research and science activities

The research and scientific work of the Faculty is oriented to solve problems related to the crises events in different spheres of social, natural and economic environment. Further, the research work is oriented to solve questions related to defense, civil security and inhabitants and property safety.

The main attention in research and science activities is given to:

- *solve theoretical and fundamental crisis management problems,*
- *investigate basic, the organizational and structural problems of crisis management in public administration,*
- *risk analyses and designing preventive actions,*
- *solve crises situations occurring in nature, economy and society,*
- *fire engineering, mainly to fire prevention and fire-stopping technology,*
- *solve live tasks in the frame of complex emergency system, to innovate the technology and technical means in fire protection,*
- *fire security of road tunnels and constructions,*
- *technical safety and fire protection of buildings and other facilities,*
- *solve tasks related to security protection of people, property and equipment,*
- *methods and technique of safety management,*
- *integrated safety systems,*
- *solve specific tasks in military logistics, oriented to military constructions, military transport,*
- *develop the transport infrastructure problems and to solve transport problems in crises situations.*

The Faculty teachers and researchers are involved in many scientific, research and expert tasks solutions through domestic or foreign grant agencies. They co-operate also with foreign partners on several international projects in various fields of risk and crises situations solution, in people and property safety and security.

SAFETY METHODS AND STANDARDS OF CLASSIFIED REALITIES PHYSICAL SECURITY

The study Safety Methods and Standards of Classified Realities Physical Security is the result of the Department of Security Management members work. It is a result of comparison of present attitudes to security standards of physical security creation and object security in the Slovak Republic but also in the Czech Republic, Poland, Germany and Austria. Some ideas found in NATO standards are also included in the study.

1. Solution description

Standards of physical security and object security (further only security standards) are instruments which can fulfil the following functions:

1. Complex and list of measures for object security in which classified realities are.
2. Basic document for audit of object security state in which classified realities are.

When formulating the security standards the following approaches are used:

1. The exploitation of points assessment method for object security state.
2. The exploitation of protection measures division method into depth with priority of time factor assessment.
3. List of required measures for objects' security according to their category and category of protected area.

Points assessment method can be used within security standards of object (physical) security in the Czech Republic. The list of security standards is divided into six basic spheres of protection measures. Protection measures in these spheres are point assessed and sum of point assessments of realised measures in these spheres functions as a standard for assessment of physical security quality.

According to the authors of this security standard, the security standards are designed as instructions for security risks management in a form of options enabling selection of the most suitable and financially the most effective combinations of security measures for security of classified information against illegal manipulation.

Assessment of time factor method is used in the document NATO C-M (2002)23 Annex „D“ *Physical Security*.

This document deals with information that program of physical security exploits the principle of “protection into depth” whose goal is to achieve the required slowdown of intruder advance.

Outer layers of physical security define as protected area and prevent illegal access into it.

The next layer detects an illegal access or an illegal access attempt and creates alarm signal for activation of guard-duty. The inside layer slows down the intruder's advance and creates time space for a guard unit to catch him. In case of physical that has been projected in this way, there is a clear relation between response time of guard - duty (T_{RO}) and slow-down time, which is caused by the system of mechanical blocks (T_S). It is necessary to fulfil this condition:

$$T_{RO} < T_S$$

Substantial condition for this method's application is installation of Intruder Detection System.

The Standard measures method is used in security standard of physical and object security, which is valid in the Slovak Republic, as well as in minimal standards for storage of the NATO classified information (*Minimum Standards for the Storage of the NATO Classified Information*) - annex D to C-M(2002)23, in *IT-Grunschutz-handbuch, Standard-Sicherheitsmaßnahmen*, which was issued by Federal Office for Security - BSI (Bundesamt für Sicherheit in der Informationstechnik), in *IT-Sicherheitshandbuch für die öffentliche Verwaltung*, which was issued by the Federal Ministry for Public Administration and Sport (Bundesministerium für öffentliche Leistung und Sport - BMÖLS) and in Poland, measures result from Act. from 22nd of January 1999 on protection of classified information (*Ustawa o ochronie informacji niejawnych*).

Working out of security standards, which will be used to provide the security of classified information is a result of this study. The structure of suggested security standards enables to create a variant system of protection measures according to local conditions (according to dislocation or object structure, according to risks and threats evaluation) by meeting requirements described in the Act No. 241/2001, as well as in the promulgation No.88/2002.

The system of protection measures is integrated into the following basic layers:

- Measures of external (perimetric) protection.
- Protection of object borders.
- Protection of protected space borders.
- Inside protection of protected space.

Subgroups of protection measures are chosen for security of protection measures, in particular, layers by exploitation of:

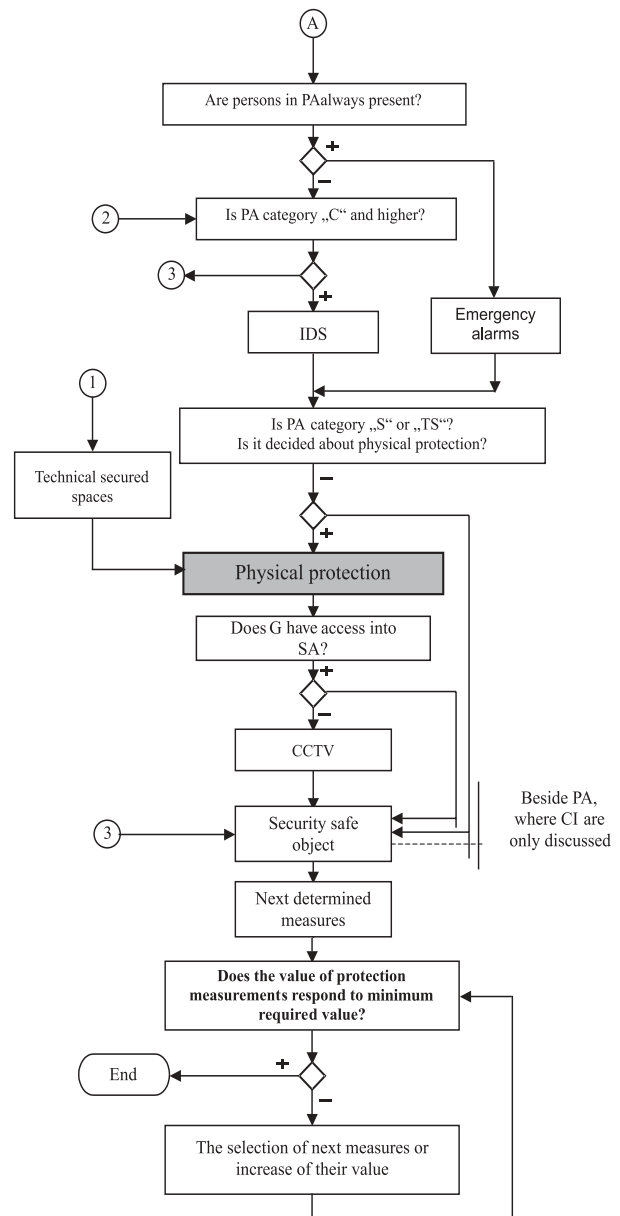
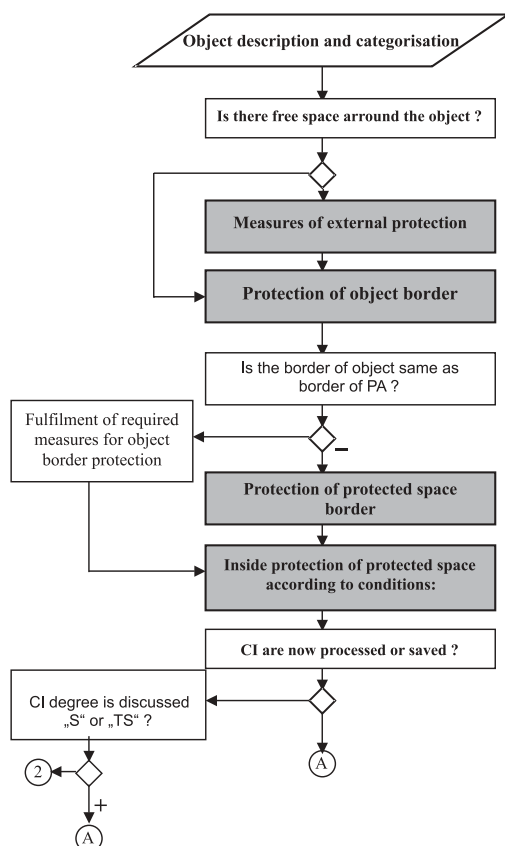
- mechanical blocks (MB),
- technical security facilities (TSF),
- physical protection.

Range and quality of the used MB, TSF used or usage of physical protection depend on the results of an object and protected area categorisation as well as on internal code in object or protected area (continuous presence of persons, rights of guard's competence and so on are taken into account).

The gist of this attitude to projection of security standards is to enable creation of functional, effective and from financial point of view optimal protection system of classified information.

Point method was used for quantitative assessment of protection measures sufficiency. Depending on the existing conditions, this method enables to select such a combination of protection measures which fulfils the determined conditions most. The access algorithm to the selection of protection measures is illustrated in Fig. 1.

Minimal point values are determined for objects and protected spaces. These values must be achieved for a chosen degree of security of classified information. These point values were achieved by assessment of protection measures which are described in particular layers of object protection and protected space and



Explanatory text:

- CCTV - Camera set (Closed Circuit Television)
- PA - Protected Area (Security Area or Restricted Area)
- C - Degree of security (Confidential)
- IDS - Intruder Detection System
- G - Physical protection (Guards)
- S - Degree of security (Secret)
- TS - Degree of security (Top Secret)
- CI - Classified Information

Fig. 1. Algorithm suggestion for selection of security standards

they are from law regulations requirements (for the security of classified realities protection) defined as obligatory measures.

Furthermore, also next recommended measures are defined for the security of classified information protection security. When using these measures it is possible to achieve an increase of level of classified information protection. The chief or his deputy (security worker or worker of special workplace) decides on their usage according to results of the security risks analysis. These measures are described separately and they are not point assessed.

2. Results applied in practice and in education

The study was worked out following the requirement and order of National Security Office. It is determined to work out and assess standards for provision of physical and object security on those places, where classified information is found (stored, processed). Recommendation processed suggestions can be used for revision of current law standards and regulations for classified realities protection.

The methods and approaches used in a process of security standards preparation but mainly information obtained from their creation and application in other states will be also used in further research works in the sphere of risk security analyses.

Study results and information obtained are also available for the sphere of education in the Security Management specialisation.

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- [2] Vyhláška NBÚ č.88/2002 Z. z. o fyzickej bezpečnosti a objektivej bezpečnosti.
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- [4] C-M (2002) 23. Annex 1, Enclosure „D“. Physical Security.
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- [6] Vyhláška NBÚ (ČR) č. 339/1999 Sb. o objektivej bezpečnosti.
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- [8] IT - Sicherheitshandbuch für die öffentliche Verwaltung. BMÖLS, Österreich, 1998.
- [9] IT - Grundschriftshandbuch. BSI, Deutschland, 2001.
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Miloslav Seidl – Lenka Rošteková

QUALITY OF EDUCATION IN THE FIELD OF TRANSPORT LOGISTICS AND ITS MANAGEMENT

1. Description and principles of education

The project called “The Quality of Education in the Field of Transport Logistics and its Management” was registered, accepted and financially supported by the Cultural and Educational Agency of the Ministry of Education of the Slovak Republic till the time of its completion in the year 2002.

Logistics is a relatively new and perspective field of science and research of the present-day Department of Technical Sciences and Informatics. In recent years this discipline has become an integral part of all study programs realised at the Faculty of Special Engineering. The purpose of the project was to create a model of logistics education in general and specifically of transport logistics.

The basis of this project solving was a fact that the training of logistics and transportation logistics specialists is carried out simultaneously in several educational institutions. Traditional fields of study and sciences focussing on technology of individual kinds of transport form the base of the present-day education. Till the present time less attention has been paid to the impact of factors with high amount of risk on transport logistics principles application in crises situations.

The fundamental principle of this project solution was organisation of regular meetings of experts working in the sphere of education, science, research and practice with focus on highly specialised points of issue combined with interpretation of new information and with publication of monothematic outputs in a form of reports. Another purpose of this project solving was a creation

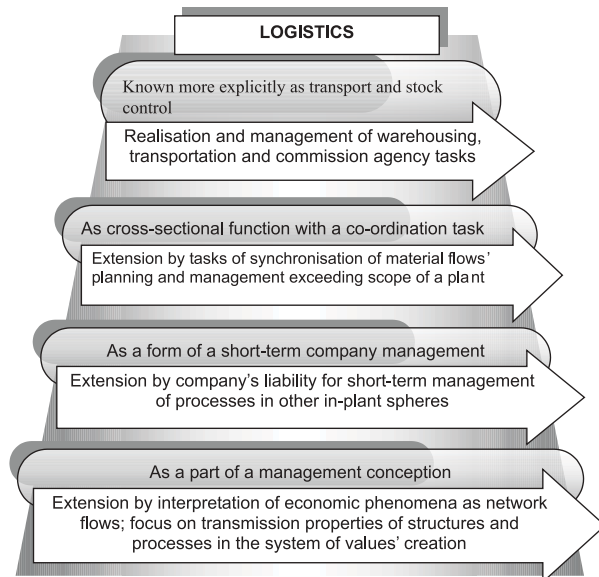


Fig. 1. Development of term logistic

of integrated study fund for university preparation of professionals working in the sphere of transportation logistics that could be used in broader context in various forms of life-long education.

2. Application of results in practice, education, and follow-up research

The most significant results achieved after this project's solving:

- Incorporation of the subject "Logistics" into compulsory subjects of all specialisations of the study fields "Civil Security" and "Fire Protection" and emphasis on this subject's importance by its higher assessment in a credit system,
- Equal position of Logistics in newly prepared study programs "Crisis Management of Transport" and "Security Management",
- Incorporation of the subject "Logistics" into alternative subjects of the doctorate study of the study field "Civil Security" and realisation of this subject's tutorial activities at the Faculty of Special Engineering,
- Incorporation of selected topics from the subject Logistics into lectures provided by the Faculty of Special Engineering at some other universities (FEM SAU Nitra, APF Bratislava),

- Teaching logistics grounds in a specialised education of the railway police personnel
- An offer of thematic tasks for graduation theses that would include solving of selected logistics' problems,
- Successful thesis defense of an external inceptor, which concerned points of issue of military transport,
- An offer of thematic tasks of doctorate study focussing on transportation logistics and admission of one internal graduant to solve these tasks
- Working out more than twenty papers on logistics' themes, which were presented at scientific conferences, including international ones,
- Organising conferences, dealing with logistics in transport topics, which included international participants,
- Publication of reports from conferences. These reports include the most important presentations.,
- Working on a textbook, expected year of its publication is 2003,
- Reinforcement and further development of co-operation between workplaces abroad, which focus on training and scientific work in the field of transportation logistics that would also include exchange programmes,
- To make use of the results when solving further scientific tasks:
 - Transportation Management in Crises Situations (project approved within Slovak-Czech co-operation),
 - Logistic provision of Evacuation (project approved and supported by Agency for Science and Technology ME SR)
 - Organisation of Railway and Road Transport in Case of Transport Route Impairment (project approved and supported by VEGA),
 - Methodology of Railway Transport Organisation in a Restricted Railway Space, which Originated by Transport Route Impairment (research project assigned and supported by MTPT SR),
 - Transport Provision in Case of Crises Situations and Creation of a System of Crisis Management in the department of MTPT SR (research project assigned and supported by MTPT SR).

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Stanislav Štofko – Jacek Binda

BILATERAL CO-OPERATION PROJECTS IN THE SLOVAK – POLISH BORDER

The University of Žilina is a sympathetic member of the Community Association and another subjects of the Euroregion Beskydy, whose goal is particularly the bilateral co-operation development.

The region of Euroregion Beskydy represents the border region among Slovakia, Poland and Czech Republic with the centres in Žilina, Bielsko – Biala and Frýdek – Místek. Until the constitution of the Euroregion the international co-operation was on the level of self governed units based first of all on mutual relations of towns and villages. The idea of activation of international co-operation led the Lord Mayors and Mayors of the villages of Žilina Region to an interesting association of legal entities of the Beskydy Region. The association was founded in 1999 on the principle of voluntary membership, and was supported by the Regional Office in Žilina. The treaty of the Slovak-Polish Euroregion Beskydy was signed in the year 2000 and after mutual agreement was extended by the third part (the Czech Republic).

Euroregion Beskydy represents a territory covering the area of approximately 3,900 sq. km and with the population 780,000 inhabitants. Members of Euroregion are totally 133 partner villages and towns from Poland, Czech Republic and Slovakia (from Kysuce, Orava and Upper Povazie). From the Polish side e.g. Bielsko-Biala, Szczyrk, Żywiec, Jordanów; the districts Bielsko-country, Żywiec, Suski, from the Czech side Frýdek-Místek, Frýdlant nad Ostravicí, Šenov, Vratimov, Brušperk, from the Slovak side Bytča, Čadca, Kysucké Nové Mesto, Námestovo, Rajcecké Teplice, Turzovka and Žilina.

Six common expert groups are responsible for the project and its objectives. The main duty of the groups is identification of the possible ways of development of co-operation in particular fields. E.g. the section for tourist traffic, culture and sport continues in successful co-operation going on for several years under the name Beskydy without borders.

This lovely territory besides its favorable geographic setting, is characterized also with a quality of human potential with relatively high educational level and qualification structure, cultural niveau, abilities to economic co-operation, attractive natural settings with opportunities to winter sports, all-year-round tourism, thermal springs, and sufficient accommodation capacities for tourist traffic, and high afforestation of the territory.

The staff of the Faculty of Special Engineering and also the staff of Faculty of Operation and Economics of Transport and

Communications have been participating in the problem solution of border regions. The projects of international scientific-technical co-operation are being solved together with the Polish partner e.g. projects “Improvement of delivering transport, postal and telecommunication services in the border regions” and “Impact risks of some property taxes for the community financing.”

Some development aspects of the border regions are incorporated in the Economy development strategy of the Slovak-Polish border regions in years 2000–2006 that is made by Government centre of strategy studies.

In term of transport, for example the transmultimodal corridor Gdańsk – Poznań/Lodź – Žilina that knots to the corridor Terst – Bratislava – Žilina – Košice – Ukraine, creates good conditions for the economy activities development and for the territory development. The services improvement, in perspective of the common EU entry, is a resource to the border co-operation regions development.

Municipalities, which administer the local communication, contribute to the development of the transport infrastructure. Property taxes fall into important incomes of community budgets, their benefit covers a relevant part of community expenses. The participation in property taxes is directly dedicated to building, repairs and maintenances of local communications.

Property taxes, first of all immovable property tax dynamically create the community possibility to accommodate to the variant conditions and support opportunities for a dynamically business development in the community territory. Risk analysis dealing with property taxes in the Slovak Republic and Poland, and as well as their comparisons with some EU countries are being worked out.

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Crisis management in public administration

prof. Ing. Ladislav Šimák, PhD.

ISBN 80-88829-13-5, University of Žilina, 2001

The university textbook of Crisis management in public administration summarises the fundamental knowledge of theory of crisis management. The textbook acquaints the students with the history and origin of crisis management, defines the ground concept of theory of crisis management, determines operations, aims and tasks of crisis management and describes its institutional classification in public administration. In the textbook are also interpreted processes of prevention of crisis phenomena and principles, procedures and tools used at their solutions. The emphasis is laid on formation and implementation of crises strategies and on information protection of crisis management. The final chapter is devoted to economic crises, their impact on society and to possibilities of their solutions.

The textbook is written for students of daily and external forms of studies in educational specialisation of Civil security at the Faculty of Special Engineering of the University of Žilina. It is used also in education processes in other universities and in practice. The textbook is a basic vocational tool for crisis managers in public administration and in self-governments. It is used in the frame of various forms of lifetime education and in PhD studies.



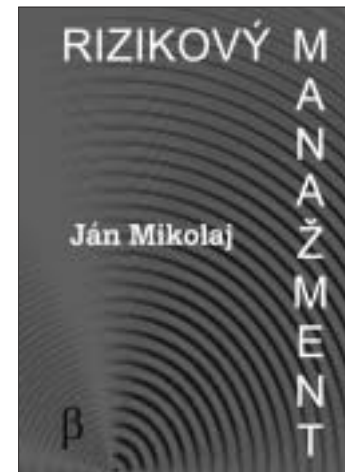
Risk management

Prof. Ing. Jan Mikolaj, DrSc.

ISBN 80-88829-65-8

This monograph on risk management is a consequential publication to the previous textbook on Theory of risk issued at the Faculty of Special Engineering of the University of Žilina. The publication belongs to first-fruits on the professional Slovak book market. The risk question is narrowly connected with the behaviour of market economy but has much larger dimension. Risk is a part of social entity and so risk has to be identified in social environment as well as in existence and behaviour of every human being. Man and his activities run always over in specific natural and living environment where risk phenomena and occasions can be also found. The substance of risk consists in uncertainty of appearance and development of phenomena and has therefore causal characterization. Risk, that is not solved, directs toward crisis. The significance of every single risk is inevitable to be measured with adequate methods. Such methods shall be found, first of all, in their quantification and in probability of their appearance. Relevant methods are provided by mathematical analysis and calculus of probability.

This monograph is dedicated not only to academic students studying questions of safety and reliability systems but also to the wide range of practitioners who are dealing with risk tasks on professional level. It is a resource for further investigation of risk problems contained especially in observation of evolutionary characteristics of technology, economy and society development.





Crisis situations in railway building

doc. Ing. Jozef Reitšpís, PhD
doc. Ing. Jaroslav Slepecký, PhD
Ing. Marian Marcin, PhD

ISBN 80-88829-72-0, University of Žilina, 2003

This university level textbook gives the basic orientation in problems of renewal of railway tracks and objects of railway base during crisis situations. The structure and contents of the textbook is adapted to these problems. They are developed from the knowledge of extraordinary situations (war operations, floods, landslides, breakdowns of structure e.t.c.) It shows possibilities of different solutions in special conditions which can be assumed and shall be solved.

The textbook is written for students of master level study in the field of transport constructions. It deals with solution of crisis situations and securing of emergency work during crisis situations. The textbook utilizes contemporary laws and technical standards in mentioned fields such as renewal of railway tracks, objects of railway base in the frame of the Slovak Republic during crisis situations.



Building and technological preparation of constructions

Ing. Marian Marcin, PhD

ISBN 80-88829-55-0, University of Žilina, 2000

The textbook gives a principal orientation in preparation of transport construction realization. The premise of successful building and technological preparation from the point of view of a constructor is elimination of uneconomically slow and usually less rate ways of realizations. These depend on immediate free building devices and to them related time, technological and organizational structures.

The main contents of textbook forms building and technological preparation of constructions from the point of constructor maker. The accent is focused on building and technological projection of earth works in transport building. The text book is designed for engineering degree students of civil specialization, to building enterprises and to experts from practice.