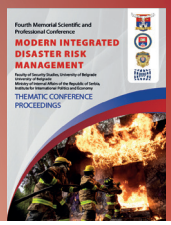
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The Role of the Faculty of Security Studies in Educating Future Professionals for Contemporary Integrated Risk Management

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Abstract

Security risks in modern society are so closely interconnected that protection models in which fire protection, occupational safety and health, civil protection and private security develop as separate fields no longer deliver satisfactory results. Drawing on foreign experience and practice, this paper argues that a new generation of professionals able to think about risk holistically is needed, and examines the role the Faculty of Security Studies can play in educating them. The paper is designed as a review study that combines a qualitative comparative analysis of study programmes and professional standards in Germany, the United Kingdom, Slovenia, Australia and the United States with the authors' systematised observations from many years of work in fire protection and civil defence. The analysis shows that all the models examined, despite organisational differences, rest on the same premise: protection works only when technical knowledge, sound organisation

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and the human factor are in balance, and specialisation is built on a common technical foundation. Field observations support this, as professionals trained in a single field find it difficult to cooperate in complex situations and lack a shared conceptual framework for assessing risk. The paper proposes that the Faculty of Security Studies continue modernising its programmes towards the technical and technological sciences by introducing common core courses for all security tracks, strengthening the engineering component (fire protection engineering, occupational safety and health, critical infrastructure management), establishing formal partnerships with emergency services and the labour inspectorate, and developing a long-term accreditation strategy aligned with European standards. Such an approach would produce professionals capable of applying theory to contemporary threats, contributing to the resilience of society and to the standing of a security profession grounded in science and rigorous technical standards.

Keywords

Integrated risk management; fire protection; occupational safety and health; private security; safety engineering; higher education.

1. Introduction

In Serbia, as in many other countries, safety and security have long developed along separate lines. Fire and rescue units deal with fires and rescue operations, occupational safety and health officers deal with workplaces and the working environment, security services protect people and property, and civil protection is activated in emergencies. Each of these fields has its own legislation, its own system of licences and professional examinations and, most importantly for this paper, its own educational pathway. While risks were relatively separate, this arrangement made sense. That is no longer the case. A fire in an industrial facility is at the same time a matter of worker safety, business continuity, environmental protection and, frequently, the functioning of critical infrastructure (Cvetković, 2026).

The need for a broader approach is clearly expressed at the international level. The Sendai Framework for Disaster Risk Reduction 2015–2030 recognises that the State has the primary role in reducing disaster risk, but that this responsibility should be shared with local government, the private sector and other stakeholders (UNISDR, 2015). Shared responsibility assumes that people from different sectors can work together, which is hard to achieve if they are trained in separate systems from the outset. Theoretical approaches

to safety send a similar message. Rasmussen (1997) treats risk management as a problem of a dynamic socio-technical system in which decisions at one level affect all others. Reason (1997) shows that major accidents can rarely be explained by the error of a single individual or service, but rather by a chain of organisational weaknesses. Leveson (2011) and the authors of the resilience engineering concept (Hollnagel, Woods, & Leveson, 2006) go a step further and treat safety as a property of the system as a whole. ISO 31000 (ISO, 2018) likewise requires risk management to be integrated into all organisational activities rather than existing as a set of isolated functions.

Even so, the education of safety and security professionals in Serbia still largely follows sectoral lines. The legal framework reinforces this, since fire protection, occupational safety and health, disaster risk reduction and private security are governed by separate laws with separate requirements for practising in each field (Law on Fire Protection, 2009, 2015, 2018; Law on Private Security, 2013, 2015, 2018; Law on Disaster Risk Reduction and Emergency Management, 2018; Law on Occupational Safety and Health, 2023). In the authors' view, the need for an integrated approach is frequently mentioned, yet few papers link the issue to the actual content of study programmes and to what happens in the field.

The Faculty of Security Studies, University of Belgrade, has recently been modernising its study programmes and shifting them towards the technical and technological sciences, introducing areas such as fire protection engineering, occupational safety and health, and critical infrastructure management. In doing so, the Faculty is moving away from a predominantly theoretical and humanities-oriented view of security towards education that gives students concrete engineering skills. This paper seeks to place that change in a wider context. Three research questions were posed:

1. How are integrated education programmes in the field of safety and security organised in selected countries?
2. What does practical experience reveal about the consequences of fragmented professional education?
3. What guidelines follow from this for the further development of the Faculty of Security Studies?

The working assumption of the paper is that education built on a common technical foundation, followed by specialisation, produces professionals who are more effective in complex situations than those trained in a single field.

2. Methods

2.1. Study design

The paper is designed as a qualitative review study drawing on two sources of evidence. The first is a comparative analysis of documents on study programmes, professional standards and relevant international frameworks. The second is systematised practitioner reflection, i.e. the authors' observations from many years of work in fire protection, civil defence and emergency management. A qualitative design was chosen because the subject of the paper is the structure of education and the nature of competences, not the measurement of the effects of individual programmes. The aim was not to rank programmes but to identify common patterns and compare them with what happens in practice.

2.2. Data sources

The literature was searched in Scopus, Google Scholar and ERIC. In addition to scientific papers, the analysis covered publicly available information on study programmes from the official websites of higher education institutions, the standards and programmes of professional bodies (IOSH, NEBOSH), materials from agencies involved in emergency management education (FEMA, AIDR), international documents (UNISDR, 2015) and the legislation in force in the Republic of Serbia. Data were collected in the period [specify period].

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2.3. Data collection procedure

Searches used combinations of keywords in English and Serbian, such as *integrated safety education*, *fire safety engineering curriculum*, *occupational safety and health education* and *emergency management higher education*, together with their Serbian equivalents. For each selected programme or system, a comparative matrix was completed along four dimensions: (1) the degree of integration of safety and security sectors, (2) the share of technical subjects, (3) the way teaching is linked to practice and (4) the mechanism of accreditation or professional recognition. Practitioner observations were grouped into thematic categories: incompatibility of knowledge in the field, coordination in crises, design and prevention, emergency management, and labour market demand.

2.4. Selection of units of analysis

Purposive sampling was used. A programme or national model was included if it combined at least two safety and security sectors (for example, fire protection and occupational safety and health), if public information on its content was available, and if it came from a country with a well-developed protection system. Narrow professional courses without an academic component were not treated as separate units, but were used where they illustrate how specialisation builds on core education. Four models were thus identified: German, British, Slovenian and Australian-American.

2.5. Ethical considerations

The study did not involve human participants or the collection of personal data, so ethical committee approval was not required. Practitioner observations are presented in general terms, without naming legal entities, facilities or individuals.

2.6. Data processing and analysis

Data from the comparative matrix were analysed thematically. Each model was described along the four dimensions, and the models were then compared to identify common elements and differences. The ratings in the comparative overview (high, medium) are qualitative and based on the authors' assessment of the documents analysed. Findings from the document analysis were compared with the practitioner observations to check whether the two independent sources led to the same conclusion. No statistical software was used, as the nature of the data did not require it.

3. Results

3.1. Germany: a model of technical integration

The German approach was examined through the undergraduate programme *Brandschutz und Sicherheitstechnik* (Fire Protection and Safety Engineering, B.Eng.) at the Berlin University of Applied Sciences and Technology (BHT Berlin, formerly Beuth Hochschule). The programme has two tracks. Students on the fire protection track study at BHT and at the same time complete firefighter training at the Berlin Fire and Rescue Academy, graduating with a dual qualification: a Bachelor of Engineering degree and eligibility for the higher technical fire service grade. The safety engineering track prepares

students for safety engineering roles in industry and public administration, although it is currently not admitting new students (Berliner Hochschule für Technik, n.d.).

What matters most for this analysis is that the first three semesters form a common foundation for both tracks. It covers physics, chemistry, engineering mechanics, electrical engineering, hydraulics, thermodynamics, hazardous substances and occupational safety. According to the authors' assessment of the curriculum, technical subjects make up more than 60% of the programme. Teaching includes laboratory work and field training, and graduates cover competences that would otherwise require several different specialists. BHT also offers continuing education programmes focused solely on fire protection, such as *Brandschutzbeauftragter* (fire safety officer) and *Fachplaner für vorbeugenden Brandschutz* (specialist planner for preventive fire protection).

3.2. United Kingdom: integration through professional standards

In the United Kingdom, integration is achieved largely through professional bodies. The Institution of Occupational Safety and Health (IOSH) offers shorter, practice-oriented courses for managers and employees, such as *Working Safely*, *Managing Safely* and *Safety for Executives and Directors* (IOSH, n.d.). The National Examination Board in Occupational Safety and Health (NEBOSH) offers more demanding qualifications, from certificates to diplomas, aimed at those working professionally in safety, including specific fire safety qualifications (NEBOSH, n.d.). The difference between the two systems lies not only in duration but also in depth and target group: IOSH provides a basic understanding, whereas NEBOSH prepares professionals for work in high-risk environments.

At the academic level, an example is the *MSc Occupational Health, Safety and Environmental Management* programme at the University of Portsmouth, which links occupational safety and health with environmental management and is designed for people studying alongside their work (University of Portsmouth, n.d.). The British approach is also strongly shaped by the concept of resilience engineering, which views safety systemically, across sectoral boundaries (Hollnagel et al., 2006). Here, professional accreditation acts as the driver of integration.

3.3. Slovenia: the closest example

The Faculty of Criminal Justice and Security (Fakulteta za varnostne vede) of the University of Maribor brings together security studies, private security and criminal justice within a single institution (Univerza v Mariboru, n.d.). This example is particularly relevant for Serbia because of the similar legal and institutional tradition, which means its solutions could be transferred to the Serbian system more easily. Graduates of such a programme move more easily from one sector to another because they share a common knowledge base.

3.4. Australia and the United States: emergency management as the framework

In Australia and the United States, integration is achieved through the field of emergency management. Fire protection, occupational safety and health, civil protection and critical infrastructure are treated as subsystems of a single framework based on an all-hazards approach. In the United States, the Federal Emergency Management Agency (FEMA) directly influences curricula through its higher education programme (FEMA, n.d.), while in Australia a similar role is played by the Australian Institute for Disaster Resilience (AIDR) and its handbook collection (AIDR, n.d.).

3.5. Comparative overview

Table 1 summarises the findings along the dimensions of the comparative matrix.

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Table 1. Comparative overview of the integrated education models analysed.

Model	Degree of integration	Technical component	Link with practice
Germany (BHT Berlin)	High	Strong (over 60%[1])	Mandatory; training at the fire academy
United Kingdom (IOSH, NEBOSH, Portsmouth)	Medium	Medium	Professional accreditation
Slovenia (University of Maribor)	High	Medium	Cooperation with state authorities
Australia and USA (AIDR, FEMA)	High	Strong	Curricula aligned with FEMA and AIDR

[1] Authors' estimate based on the curriculum of the *Brandschutz und Sicherheitstechnik* programme.

Regardless of country or institution, all the models analysed share the same key premise: today's safety and security challenges require professionals with broader, integrated competences rather than narrow specialists who do not understand the system in which they work. The differences concern

how integration is achieved. In Germany it is primarily the technical curriculum, in the United Kingdom professional standards, in Slovenia institutional consolidation, and in Australia and the United States a common emergency management framework (Cvetković, 2025).

3.6. Observations from practice

3.6.1. Incompatibility of knowledge in the field

Firefighters usually assess risk in a building primarily in terms of fire spread and rarely consult its occupational safety and health documentation. Conversely, occupational safety and health specialists, including labour inspectors, are generally unable to assess the condition of fire protection systems on their own. Both sides work conscientiously, but each sees only its own part of the picture.

3.6.2. Coordination in crises

Professionals from different services often use different terms for the same problem. In a crisis, valuable time is therefore spent establishing basic communication, something a professional with an integrated education would take for granted from day one.

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3.6.3. Design and prevention

A fire protection engineer may design an extinguishing system without taking into account the risks to workers when it is activated, for example gas extinguishing systems discharging in occupied rooms. At the same time, an occupational safety and health specialist may analyse workplaces without assessing the fire load. An integrated approach treats these two stages as inseparable.

3.6.4. Civil defence and emergency management

Civil protection plans require coordinated participation of firefighters, occupational safety and health officers, health workers and infrastructure operators. In practice, each of them brings a different conceptual framework and a different way of thinking about risk and decision-making under pressure. The result is the absence of a common operational picture, which has direct consequences in an emergency (Cvetković, 2023).

3.6.5. The safety manager as a real labour market need

Safety management in large organisations requires a person who understands fire protection, occupational safety and health, emergency planning and the organisation's security policy. In practice, this role is usually given to a single specialist who learns the rest on the job. In other words, employers are already looking for a safety manager rather than three separate specialists, while the education system lags behind.

4. Discussion

The comparative analysis and practical experience, as two mutually independent sources, lead to the same conclusion: a partial approach to educating safety and security professionals does not match the nature of contemporary risks. This is consistent with the systems view of safety in the literature (Rasmussen, 1997; Reason, 1997; Leveson, 2011), according to which risk cannot be managed effectively when knowledge about it is scattered across services that do not communicate with one another. The field observations essentially describe what Rasmussen (1997) calls the problem of aligning decisions made at different levels of a system: each service makes reasonable decisions within its own remit, but their sum is not necessarily safe.

The differences between the models show that there is no single correct path. The German model rests on a strong technical foundation and close ties with the operational service, as reflected in the dual qualification of its graduates. The British model shows how much professional bodies and accreditation can contribute to integration beyond the university. For Serbia, the Slovenian model is the most accessible first step because of the similar legal and institutional context, while the German model represents a long-term strategic goal: a technical faculty with engineering accreditation. The Australian-American approach offers a useful conceptual framework, since it treats all sectors as parts of a single emergency management system.

A common objection to integrated education is that it dilutes specialisation. The examples analysed suggest the opposite. Alongside its integrated undergraduate programme, BHT Berlin offers narrowly specialised continuing education in fire protection, and the British system has a clear progression from basic IOSH courses to demanding NEBOSH qualifications. Integration therefore does not mean abolishing specialisation but building it on a common foundation. Figure 1 shows this relationship in the form of the conceptual model we propose.

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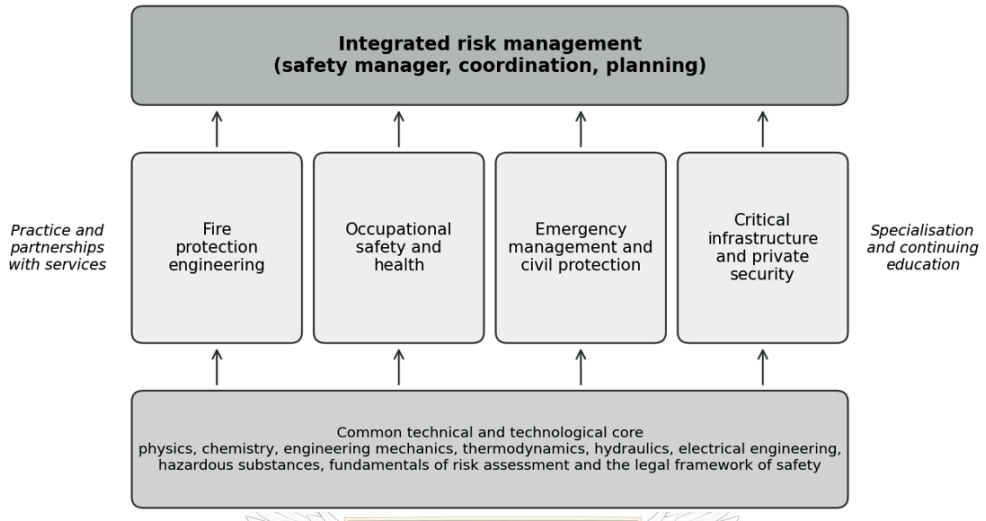


Figure 1. Conceptual model of integrated education: a common technical and technological core, specialist tracks, and integrated risk management as the outcome.

It is also important for Serbia that fragmented education mirrors fragmented regulation. As long as fire protection, occupational safety and health, disaster risk reduction and private security are regulated separately, with separate professional examinations and licences, an integrally educated professional will in practice have to collect several separate authorisations. Changes in education should therefore go hand in hand with a dialogue on how the licensing system could be adapted (Cvetković, 2021). Based on the analysis, we propose the following for the Faculty of Security Studies:

1. introduce common core courses of a technical and technological nature for all security tracks;
2. further strengthen the engineering component of studies, particularly in fire protection engineering, occupational safety and health, and critical infrastructure management;
3. establish formal partnerships with emergency services and the labour inspectorate, covering student placements and joint exercises;
4. develop a long-term strategy for accrediting safety engineering programmes in line with European Union standards.

The study has several limitations. The analysis covers a small number of purposively selected models, so the findings cannot be generalised to all education systems. Programme information was taken from publicly available sources, which may not reflect actual teaching practice. The ratings in the comparative overview are qualitative, and the practitioner observations inevitably bear the mark of the authors' personal experience. Future research

could survey employers on the competences they expect from safety and security professionals, track the employment and career progression of graduates from different programmes, and map in detail the learning outcomes of existing Serbian programmes against the foreign models analysed.

5. Conclusions

Foreign experience consistently shows that integrated education in the field of safety and security is not a passing trend but a response to the real nature of contemporary risks. Many years of practice in fire protection and civil defence confirm the same from the field: professionals trained in a single area are effective in narrow and predictable situations, but it is precisely complex situations that dominate in practice. Modernising the study programmes of the Faculty of Security Studies towards the technical and technological sciences therefore makes sense and should continue, with a common technical foundation, a stronger engineering component, closer ties with the services and a clear accreditation strategy. In this way, the Faculty can educate professionals who know how to apply theoretical knowledge in practice, contribute to the resilience of society and the standing of the security profession, and become a regional leader in integrated risk management education.

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