



Steinbeis Transfer Institute
Advanced Risk Technologies (R-Tech)

Steinbeis University Berlin, Germany



INTERNATIONAL. EUROPEAN. GERMAN.

European Master and Certification Program in
IBRE - International Business
and Risk Engineering (M.Eng.)



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Steinbeis University Berlin SHB

Founded in 1998, Steinbeis University Berlin (SHB) is a state-approved private university that offers students and companies practice-oriented, extra-occupational higher education based on the project competence concept, leading to nationally recognized qualifications. The research carried out by SHB focuses on issues with practical applications. The SHB portfolio of courses ranges from certification courses to degrees and doctoral programs. During the competence developing Steinbeis degrees students manage and implement projects in the company sponsoring their studies.

SHB is an enterprise in the Steinbeis Network, an international service provider in entrepreneurial knowledge and technology transfer. Specialized in chosen areas, Steinbeis Enterprises' portfolio of services covers consulting; research and development; training and employee development as well as evaluation and expert reports for every sector of technology and management.

www.steinbeis-hochschule.de



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WHY SHOULD YOU RELY ON STEINBEIS ?

The Steinbeis University Berlin (SHB) is the largest state-approved private university in Germany. Built on the ground-breaking intuition of Ferdinand von Steinbeis who invented in the 19th century a dual education combining academic study and practical work, the SHB has implemented its business-oriented technology transfer "Project Competence Concept". From the Bachelor study up to doctoral degree, more than 11,500 graduates have benefitted from the SHB's practice oriented higher education.

The Steinbeis Transfer Institute Advanced Risk Technologies is part of the Steinbeis University Berlin and dedicated for risk management activities. Building upon the success of the Group and its network of European, national and large-scale industry projects, the Institute is committed to transfer its know-how and holistic understanding to new generations of experts and leaders. The integrative approach and application-oriented study linked to industry and research projects are the cornerstones of the study programs offered by the Institute.

- **Founded in 1998** • **State-approved**
- **+7000 Students** • **+11 500 graduates** • **Accredited**
- **Specialized in practice-oriented, extra-occupational higher education**



PHD PROGRAM

See the results of your doctorate work applied

In 2003, the SHB is bestowed the right to offer PhD programs. The Project Competence PhD also adheres to dual education principles in parallel to work. PhD students must work on a research project within a company or organization sponsoring them. The project must be approved and supervised by the SHB while the research forms the basis of the dissertation, underpinned by optional seminars on related subjects and compulsory colloquia to monitor progress.

Same as for the masters' degrees, the Institute for Advanced Risk Technologies might support you to find a 3-5 years projects which will finance your PhD and set the framework for your researches.

- **Financed**
- **3 to 5 years**
- **International network**
- **Mentored by field experts**
- **Focus on real world challenges**

The costs for the research project will be determined in the contract between the Institute of Advanced Risk Technologies and the sponsoring organization. The research project costs can be paid by the sponsoring organization.

3 MASTERS' DEGREES

- **Master of Risk Engineering and Management**
M.Eng | 2 years | 120 ECTS
- **Master of International Business and Risk Engineering**
M.Eng. | 2 years | 120 ECTS
- **Master of Business Administration**
MBA | 2 years | 90 ECTS

Work and study: an admission requirement

The Project Competence Concept, based on the German dual education system, is implemented in every degree offered by the SHB. In concrete terms, students willing to enroll must have a sponsoring company or organization. They work for two years on a project in their companies and gather every 4 months for 1 month courses.

Through the real world projects mentored by industry experts and providing tangible outcomes, the two year project in the sponsoring company gives students the tools, competencies, network and confidence they need to boost their career as well as the support to finance their study.



PROFESSIONAL CERTIFICATION PROGRAM

8 Titles to be obtained

The certification program offers the opportunity to develop specific knowledge and skills for assessment and analysis of risks in their respective actual or future professional field. The specialization is obtained in parallel with full employment

The completed certification courses can be aligned with those of the Master program. If the candidates wish to enroll as Master students, the completed certification courses will be transferred into the structure of the Master.

For additional information, please visit our website or contact us directly.

1. **Risk Professional** - any module of the curriculum
[5 ECTS – 13 Days]
2. **Risk Examiner** – Health, Safety, Security and Environment (HSSE) specialization
[13 ECTS – 34 Days]
3. **Risk Examiner** – Plant, asset and equipment oriented risk management specialization
[13 ECTS – 30 Days]
4. **Senior Risk Assessor** – Health, Safety, Security and Environment (HSSE) specialization
[18 ECTS – 43 Days]
5. **Senior Risk Assessor** – Plant, asset and equipment oriented risk management specialization
[18 ECTS – 39 Days]
6. **Risk Professional in Risk Based Inspection** – basics concepts of RBI
[5 ECTS – 8 Days]
7. **Risk Examiner in Risk Based Inspection** – advanced methods and tools of RBI
[9 ECTS – 21 Days]
8. **Risk Governance Specialist**
[24 ECTS – 30 Days]

EUROPEAN MASTER IN INTERNATIONAL BUSINESS AND RISK ENGINEERING

Degree: Master of Engineering (M.Eng.)

Field: Advanced Risk Technologies

Specialization: International Business and Risk Engineering

The Concept

The Master Program in International Business and Risk Engineering of the Steinbeis University Berlin is designed for graduates and young professionals who wish to develop their knowledge, skills and competencies in the field of international business, advanced modern technologies with a product-life-cycle perspective, environmentally sound technologies, formulation and implementation of strategies of risk management as well as skills for understanding these approaches in the broader international and intercultural context of engineering science to cope with complexity of globalization and smart technologies.

The Master Program in International Business and Risk Engineering of the Steinbeis University Berlin is designed for graduates and young professionals who wish to develop their knowledge, skills and competencies in the field of international business, advanced modern technologies with a product-life-cycle perspective, environmentally sound technologies, formulation and implementation of strategies of risk management as well as skills for understanding these approaches in the broader international and intercultural context of engineering science to cope with complexity of globalization and smart technologies.

The program draws on the extensive knowledge and skills of lecturers who are leading experts in their corresponding fields. The strength of their academic and practical background contributes to the high quality of the study program.. During the project work se-

Part of our commitment to the highest quality standards goes through the external assessment of our study programs. Furthermore, the accreditation ensures the international recognition of the earned degrees.

- The study programs have been accredited by ZEvA (Central Evaluation and Accreditation Agency) for the period 2016–2020
- The Institute is ISO 9001:2008 certified by ZDH-ZERT
- The Steinbeis University Berlin is state-approved



lected coaches and a supervisor will guide the student in order to transfer methodological knowledge acquired from courses to solve practical challenges in the company.

In terms of curriculum and organization, the Project-Competence-Concept – based on the dual-study system – goes way beyond conventional degrees. The concept of integrated work on projects companies is set to facilitate integrated technology transfer, whereby the students gain new skills and create a professional network as part of their studies and apply their gained knowledge on practical everyday risk issues by supplying deliberate, pertinent and theoretically sound solutions to business problems.

As a result, career prospect for graduates of Master in International Business and Risk Engineering are above the average because of the great and increasing need on the market for risk professionals with international business oriented managerial skills, combined with past working experience and a strong network. Successful completion of this program is the ideal preparation for future management tasks and offers the possibility to do a doctorate.



Degree
Master of Engineering (M.Eng.)



Field - Specialization
Advanced Risk Technologies - International Business and Risk Engineering



120 ECTS



Program form
Extra-occupational (Study & Work)



Duration
4 Semesters - 70 days seminar



25 places



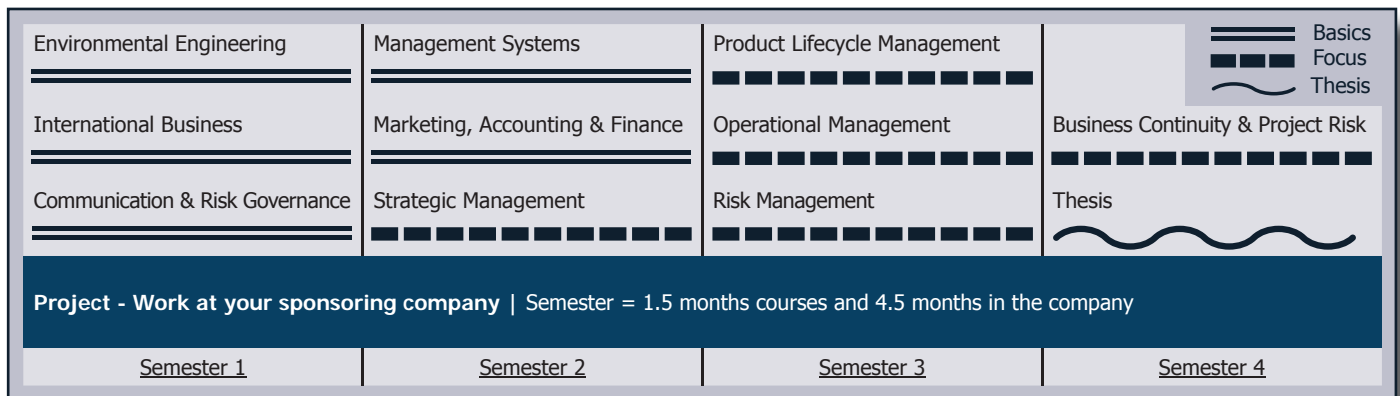
Fees / Semester
€ 4700



Location
Stuttgart, Germany



Applications
All year round



Courses and CPs

The modular structure of the study enables the student to schedule her/his timetable according to obligations at work. The 2-year program includes 30 CPs for foundation modules covering the basics of International Business. 30 CPs, divided into five modules, are foreseen for the specialization in Risk Engineering. The remaining CPs are earned through the project work. The project study paper and the Master Thesis are the final and tangible product of the project work carried out in the sponsoring company. After the admission to the program each student receives a personalized study schedule where the courses are defined. The whole program of the courses as well as the thesis and project work are aligned with the project and the student's academic and company supervisors.

Admission requirements

- Bachelor's Degree (180 ECTS) in the area of Engineering, Business Administration, Science or Industrial Engineering.
- Above average grade in previous studies (≥ 2.4 in the German grading system)
- Good knowledge of English certified (B2 level or equivalent)
- Successfully passing the aptitude test

Degree

On a successful completion of the program, Steinbeis University Berlin will award the degree Master of Engineering (M.Eng.) with the specialization in Risk Engineering and Management. The degree is issued by Steinbeis University Berlin which is approved and acknowledged by the state since 1998.

Examinations

The examinations may involve:

1. Written examination: up to 120 minutes written paper with 4 kinds of questions (true/false, multiple/single choice, short answers, essay/calculation, examples)
2. Oral examination: up to 60 minutes verbal discussion, optional presentation included
3. Presentation: up to 20 minutes with visuals
4. Publishable papers
5. Case studies
6. Project Study Paper: up to 20 pages, topic specified by the project and student's supervisors
7. Transfer Paper: 1 page, applying theory studied in a course onto the company's situation, to be written after each completed module

Admission

The admission process involves 5 steps:

- Step 1:** Expression of interest by the student
- Step 2:** Preliminary eligibility check
- Step 3:** Full application
- Step 4:** Aptitude test (e-based) and/or approval test (oral)
- Step 5:** Enrollment

Fees

The tuition fee covers the full study period of 4 semesters, is paid per semester and covers the costs of all courses, course materials, consultations and individual coaching. Travel and lodging costs are not included in this tuition fee (full tuition fee 2015 was 18,800 €). For further information, please contact us directly.

CURRICULUM

Description of the modules and their respective courses

Module PK: Project

Credit Points: 60 | Module type: compulsory

Throughout the course of the program, the students work on an admitted project (basis: project specification, project criteria, project work,) in their companies or organizations (project sponsor), which is supervised by certified project coaches.

PK1: Transfer Papers (TA)

Transfer paper (TA) is an evidence of the students' ability to specifically transfer and utilize the knowledge obtained in a course attended in their projects or companies. The TA shall be prepared after the course and shall be presented in coordination with the responsible lecturer. The assessment of the TA is carried out by the responsible lecturer and further by a SHB examiner. It complements to the final grade.

PK2: Project Study Paper (PSA)

Credit Points: 9

In the Project Study Paper (PSA) the students transfer and utilize the methods and knowledge acquired within the scope of the programs. PSA has to have at least 20 pages in writing and it is submitted by a student as a rule. The PSA is presented and defended by the student in front of examiners.

PK3: Project Work (PA)

Credit Points: 33

During the study, a student works on a project (project work, PA) in his company or organization (project client). This work is a basis for master thesis which the student has to submit at the end of his study program.

PK4: Thesis

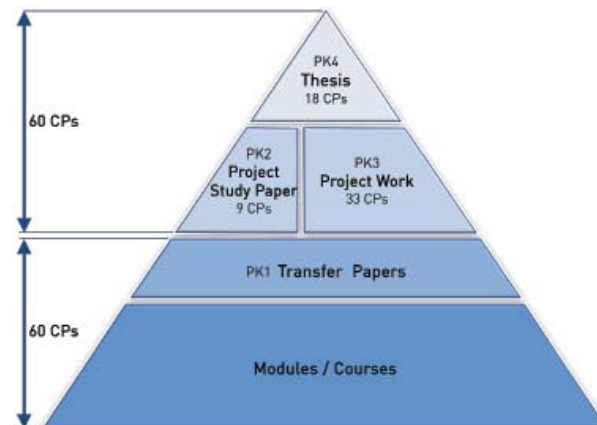
Credit Points: 18

The thesis is a practice-oriented, scientifically prepared document which reflects the knowledge and skills a student has acquired throughout the study program and applied to a project relevant for his occupational environment. The thesis shall prove the student's ability to solve the specific problem in his/her company in an autonomous and methodical manner. As a rule, the project is defined and specified together with the student, the project client and the coach of the SHB upon the start of the study program (project specification).

Module I: Environmental Engineering

Credit Points: 6 | Course type: compulsory

This module prepares students who are interested in using the tools



Where the CPs come from

of science and engineering to solve problems in the natural and artificial environment. It deals with the latest technical methods, techniques and tools to control and prevent environmental impact on soil, air, biotics and water. It deepens the understanding and ability to analyze interconnections and interactions between environment, industry, ecological- and economic systems.

B1-1: Environmental Impact Assessment

Environmental Impact Assessment (EIA) is a concept described in Directive (2014/52/EU) entered into force on 15 May 2014 and aims to assess the potential effects of projects on the environment. Also this EU directive is mandatory for big projects such as infrastructure project, the concept and process described is useful for other projects as well. EIA concept and process can be helpful to improve the level of environmental protection. This leads to making business decisions on public and private investments more sound, more predictable and sustainable in the longer term.

B1-2: Clean Technologies

The course covers the main topics connected with new clean technologies. Clean technologies reduce the impact of processes on the environment. In our resources and energy dependent societies, clean technologies refer to the technical means enabling to produce energy and handle resources whilst minimizing pollution and reducing the environmental footprint. In other words, reduce the environmental impact described in another course of the module. Attendees acquire here a deeper understanding of environmental technologies and recognize the differences between conventional energy resources and "clean" ones. Furthermore, they learn how to introduce clean technology alongside the production processes.

B1-3: Renewable Energies

The main core of this course is to improve knowledge about opportunities and threats related to renewable energies. The historical and societal factors explaining the rise of renewable energies will also be presented, but the focus of this course is more on the technical side. After course students are able to evaluate scenarios connected with energy costs, as well as make plans and calculation useful in practical experiences.

B1-4: Energy Management

Energy is one of most important aspects in industry and companies at large. After it's generation, companies have to manage the energy. But also the utilities and grid operators have to manage energy, because of it's impossibility to be stored over a long time or in huge amounts efficiently. Balancing energy consumption and energy generation also on company level is vital and cost relevant. Avoiding extra cost, Energy management is a core task to managers. The course covers the main topics of energy management, such as efficiency improvement, ways of saving energy with respect to reduction of GHG emissions or saving money. Special attention is devoted not only to generally applicable law regulations but also acquaintance-ship students with their organization's environmental goals. It also includes topics about monitoring and targeting, energy auditing, solution development and energy management trade.

Module II: Communication and Risk Governance

Credit Points: 6 | Module type: compulsory

This module explains principles of modern risk governance and communication by presenting state-of-the-art frameworks, researches and tools. The understanding of communication processes and the improving of information and communication techniques related to risk and hazards are central themes of the module. Students will be confronted to the different levels of communication ranging from Governance at national scale, Industrial Risk Psychology at organization's scale and the issue of perception at the individual scale. The use of Key Performance Indicators (KPIs) for assessing and managing issues related to emerging risks will also be highlighted

B2-1: Risk Governance Concepts and Practice

The course explains principles of modern risk governance including its main elements as described in the IRGC framework: a) pre-assessment, b) risk appraisal, c) risk characterization and evaluation d) risk management and e-risk communication. Apart from each of the elements (e.g. under "Risk Assessment": hazard identification and estimation, exposure and vulnerability assessment, risk estimation, exposure and social concerns, socioeconomic impacts) the examples from industrial practice will be shown and explained. A separate part of the course will be dedicated to the overview of specific methods and techniques (e.g. Delphi), as well as to the tools and instruments facilitating the application by industry, governments and public bodies.

B2-2: Risk Perception and Risk Communication

This course presents theoretical backgrounds and state-of-the-art research issues on perception and communication of risk. It aims to provide a solid basis for further developments of such work tasks by including theoretical achievements in the related fields, various examples from field work, and an internal training exercise. The understanding of communication processes and the improving of information and communication techniques related to risk and hazards are



central themes of the course. The course will also provide insight into selected historical aspects as well as current topics and literature.

B2-3: Concepts and Applications of Key Performance Indicators for New Technologies

The course addresses the issue of Key Performance Indicators (KPIs) as used in the safety and risk assessment, in particular for assessing and managing emerging risks linked to New Technologies. Main concepts developed by organizations like OECD, API, HSE/HSL, CCPS or VCI are presented in detail. Application of these and other concepts, as well as the corresponding guidelines, are discussed in the second part of the course, where also the practical aspects of these applications, including tools and practical views from industry on the use of indicators are presented and discussed.

B2-4: Industrial Risk Psychology

Industrial Risk Psychology is the scientific study of employees, workplaces, and organizational risks. Industrial Risk Psychology (IRP) contributes to an organization's success by improving the performance and well-being of its people and technological process. An IRP psychologist researches and identifies how risks can improve behaviors and attitudes by using risks through hiring practices, training programs, and feedback systems. IRP psychologists also help organizations' transition among periods of change and development.

Module III: International Business

Credit Points: 6 | Module type: compulsory

This module aims to present a clear picture of the global and ever-changing business environment. Firms engaging in international activities will have to face other challenges than the ones focusing on their national or well-known regional markets for their whole activities, but will also be able to grab other opportunities. Internationals markets and organizations shape a different environment with own rules and traps that this module will highlight. Beyond the classical economic principles and regulations, the module will also emphasize on the importance of cultural differences and gives some outlooks, including amongst other the concept of corporate social responsibility..

B3-1: International Markets

The course highlights the main topics of trade in competitive market. Starting from the “classical” theories and models, attendees will also be introduced to “alternative” trade theories and their empirical background. Special attention is devoted to explaining the scope of the WTO and its impact on international trade. Beside those historical and economical aspects, the course will also cover regulations aspects, from the global to the regional level (e.g. specificities of the EU’s internal market). This will allow attendees to have a critical understanding of practical and theoretical aspects, issues and challenges of international and regional markets.

B3-2: Managerial Economics

This course on managerial economics focuses on the practical implementation of economic principles and theories and shows how to apply them in decision making situations within organizations. Those decisions are always to be made under conditions of risk and uncertainty but can be improved through a sound understanding of the external environment and the use of appropriate tools and techniques.

B3-3: Business Communication and Management of Intercultural Differences

In the times of ever increasing globalization, cultural differences and multilingual issues play an important role in the area of business communication which can easily fail on apparently banal issues. This could be of particular importance also in collaborative international projects. A cognitive approach toward cultural and national differences will be used throughout the training.

B3-4: Integrated Corporate Social Responsibility and Sustainability

The course presents basic elements of the concept of Corporate (Social) Responsibility (CSR) and its practical application in industry. It starts with key elements of the CSR, focuses on CSR methodologies and tools and on the technology related aspects as a part of the modern practices of industry (HSE, HSSE). Analysis/comparison of the practices in the EU, US and other countries and relevant data and information on best practices worldwide are elaborated, including a number of relevant case studies from the key industries and references to main sources of relevant data and information. A particular unit of the course is dedicated to the ISO 26000 standard.

Module IV: Management Systems

Credit Points: 6 | Module type: compulsory

This Module aims to present concepts, tools and regulation needed to implement an integrated management system taking into account the whole spectrum of managements’ duties and challenges ranging from meeting customer’s requirements to coping with uncertainties. The courses of the module will cover project and quality management, introduce risk management principles and give an overview of



EU regulation in the field of HSSE (Health, Safety, Security and Environment).

B4-1: Introduction to Risk Management

The course covers the main topics of industrial safety, starting with different aspects of risks and terminology used in the field. The main part of the course is dedicated to the related EU directives and their application in industry. The course outlines goals, scope and required measures / obligations considering acute (e.g. accidents-related) and chronic (e.g. pollution-related) risks. Special attention is devoted to major accident prevention and related process safety risk assessment methodologies.

B4-2: Health, Safety, Security and Environment

The course gives an overview of EU regulation in the field of HSSE (Health, Safety, Security and Environment), explains the objectives and requirements, as well as the state-of-the art in the implementation including constraints and advantages. Special focus is on the Integrated Pollution Prevention and Control (IPPC) and Industrial Emission Directive (IED) and on the prevention of major accidents (Seveso).

B4-3: Quality Management

This course aims on the one hand to convince every attendee of the importance of an integrated quality management system by presenting the philosophy standing behind it, supported by numerous examples. On the other hand it will present the methodology and the tools required to implement quality management within their organization. Special attention will be given to the ISO 9001 standard and to the involvement of various organization’s stakeholders.

B4-4: Project Management

This course aims to prepare attendees to the special environment of project work. Whether as project stakeholders or managers, they will learn the frameworks, tools and techniques allowing them to adapt to every situation and to work effectively. They will learn from experienced training how to avoid common mistakes, and be able to understand both the technical and human aspects of a project.

Module V: Marketing, Accounting and Finance

Credit Points: 6 | Module type: compulsory

This module provides an introduction to the broad scope of managers' activities. Both financial and managerial accounting will be presented along with analytical and practical tools essential for value-based management. Techniques and instruments related with defining critical marketing strategies will also be tackled. This will allow the attendees to be able to evaluate a corporation's major strategic and investment decisions from a financial perspective, without forgetting the global picture and the customer's point of view.

B5-1: Marketing Management

The course gives the participants an opportunity to acquire knowledge and skills required for implementing effective marketing and sales strategies. A holistic approach will raise the awareness of attendees on the importance of these strategies and their sociological basis. They will be empowered to implement marketing activities and to monitor the effect of their actions.

B5-2: Managerial Accounting

The course covers the main topics of managerial accounting, such as identifying, measuring, analyzing, interpreting, and communicating information for the pursuit of an organization's goals. A strong focus will be given on the practical application of this knowledge, and on how to capitalize on it within their own organizations.

B5-3: Managerial Finance

This course aims to introduce attendees to the principles and concepts of managerial finance. It will provide them knowledge and skills needed to well-informed decision making. Whether they have to decide which project maximizes the shareholder's value or explain to them how the organization will finance this project, attendees will learn how to use analytical tools and interpret and communicate the results.

B5-4: Methods of Research and Analysis

The course gives a comprehensive overview of research methods, ways of presentation outcomes and making statistical and interpretative analysis. During the course specific research's language is also presented. Students will learn how to use theoretical knowledge in practice too.

Module VI: Strategic Management

Credit Points: 6 | Module type: compulsory

In the 21st century's work organization which requires managers to be flexible and to have an overview of the whole scope of managerial aspects; having broad knowledge and applicable skills became crucial. As the success or failure of a company often involves various internal and external factors, gaining a sustainable competitive advantage requires a sound understanding of the concepts, methods and tools of strategic management. This module aims to prepare



attendees by presenting them how a company's strategy relies on an integrated approach of HR management, organizational behavior, economics and sustainability theories. A strong focus will be put on the practical implementation of the gained knowledge through case studies, developing not only specific competencies, but also general social skills.

B6-1: Management of Strategies

The course will provide tools and techniques needed to understand different corporate and strategic analytical tools and methods needed for successful entrepreneurial activity. The participants will be able to bring decisions based on different complex economic and strategic interrelations.

B6-2: Organizational Behavior

The 21st century has witnessed structural transformations of working places and overall work organization. From the nowadays classical open-space to the table football and tennis facilities provided by some companies for their employees, the issue of organizational behavior and the influence of the work environment became a central concern in a wide range of companies. This course aims to highlight this evolution, looking at those issues and present solutions. It will describe the individual or micro level but also present findings on the organization or macro level.

B6-3: Sustainability Management

This course on sustainability management has two purposes: on the one hand it aims to raise awareness on contemporary issues, how they are tackled and who are the involved stakeholders. On the other hand this course aims to convey knowledge and techniques to enable attendees to involve themselves in the sustainability management process. A special attention will be given to the didactic dimension of sustainability management.

B6-4: Human Resource Management

In the collective psyche Human Resource Management (HR) is often associated with the basic tasks of hiring and releasing staff. The impact of an efficient HR strategy on the daily business activities is repeatedly overseen. This course will highlight the broad scope covered by HR

management, giving attendees the keys to integrate it into the overall organization's strategy and making them understand how it can be a source of sustainable competitive advantage.

Module VII : Product Lifecycle Management

Credit Points: 6 | Module type: compulsory

Product Lifecycle Management is a comprehensive approach for effective and efficient design of information from "cradle" to "grave" of a product. Based on the administration and monitoring of the whole information available on products, methods and tools are made available to provide the right information and quality at the right time, and at the right place. Upon completion of this product life cycle management module, students are able to initiate, plan and monitor a product life cycle within their company or project. In addition, they develop the skills to evaluate existing processes to align them with emerging industry best practices.

B7-1: Value Analysis

In modern times, successful organizations can't rely on only to assessing and understanding customer's needs, but they also have to know how to prepare the right design process that will deliver the optimal solution. The main purpose of the course is to give students a comprehensive knowledge about the concept of value and show them how to implement it to respond correctly to customer's requirements.

B7-2: Function Analysis

This course aims to present a large set of methods, concepts, tools and techniques enabling the students to perform functional analysis. The purpose of a functional analysis is to investigate the concepts and impacts of a product or service. The course will highlight structured methods such as the Functional System Analysis Technique (FAST) as well as more informal ones such as mind mapping or value trees..

B7-3: Functional Performance Specification

Technique of defining the requirements of a project, service or product is presented in this course. By getting familiar with the Functional Performance Specification (FPS) technique, attendees will be able to document their performance requirements in terms of functions and needs and not in terms of a specific solution. After the course students are able to use FPS on every stage of project/organization development, enabling them to propose innovative solutions that meet the requirements. The innovative side arise because this technique focuses more on what the solution should do and not what it should be. Customer's needs are transformed into functions, themselves specified as specific requirements before becoming a solution in terms of a product or a service..

B7-4: Life Cycle Analysis and Assessment

The course gives the participants opportunity to improve the knowledge about the Life Cycle Assessment (LCA) and to gain the skills to perform simplified LCA studies and to analyze, discuss and comment



international scientific articles on LCA. The course provides a comprehensive overview of the Life Cycle Assessment (LCA), Life Cycle Costing (LCC), International Reference Life Cycle Data System (ILCD) and European Reference Life Cycle Data System (ELCD). The focus will be on practical examples of applying LCA in industry and improving the environmental performance and sustainability of products and services..

Module VIII : Operational Management

Credit Points: 6 | Module type: compulsory

This module aims to highlight the concepts and techniques related to the design, planning, control, and improvement tasks encountered by managers within their organizations. It will present conceptual frameworks and tools enabling a better understanding of operational management. Challenges, opportunities and related risks will be shown in a new light, and it will be explained how informed decisions can help attendees to get more out of them. Last but not least, the module will introduce the customer's point of view and expectations to the assessment of operations.

B8-1: API RBI Concepts in Industry

The focus of the course is set on the standard of American Petroleum Institute API 581 (API RECOMMENDED PRACTICE 581:2008 Risk-Based Inspection Technology) and its application in petrochemical industry. The course elaborates the basic concepts of API 581 and explains the principles of Risk Based Inspection. This methodology encompasses techniques such as Probability of failure, Consequence of failure, Risk analysis and Inspection planning based on Risk Analysis.

B8-2: Production and Operations Management

This course aims to highlight the implementation of requirements into processes and actual operations. With regards to global environment that companies are facing nowadays, the course will cover a broad range of topics going from forecasting to quality control. Case analysis will be presented in order to make the bridge between theory and practice.

B8-3: Innovation Risk Management

The development of new products and technologies is a risky and uncertain process. The success of the new technology does not lie just in the invention part or in the generation of innovative ideas, but also in the successful management of the innovation process from an idea to products and services in the market. The management of innovation is a process - described in this course - which includes a disciplined, stage-by-stage approval process combined with regular measurement of every critical factor, ranging from the capability of the product to reach the target characteristics to success in the market. The TRL (Technology Readiness Level) assessment is done as practical example on several cases from industry.

B8-4: Vulnerability Analysis and Return on Prevention Analysis

Vulnerability Analysis is a prerequisite to a risk assessment. Coupled with return on prevention analysis it could serve as an essential step in risk management and future scenarios development, giving managers and risk specialists a powerful decision assisting tool. This course aims to build up competences regarding vulnerability analysis in industry based on the current best practice in EU, as well as to provide basic knowledge regarding Return on Prevention Vulnerability analysis. Return on Prevention assessment gives the efficiency of the money and resources invested. The course presents the latest methodologies and instruments and also the latest stage of art.

Module IX: Risk Management

Credit Points: 6 | Module type: compulsory

In an uncertain world, risk management experts are in demand – and risk management is an emerging role across all industries and sectors. Risk management can improve everything from an organization's ability to meet targets to its employees' job satisfaction - but it's often a highly controversial area and a source of dispute and litigation..

B9-1: Principles and Methods of ISO 31000

The course covers the International Standard of ISO 31000:2009 highlighting the relationship between the risk management principles, framework and process as described in this International Standard. The course also highlights issues related to the applicability of the standard in industry and in general.

B9-2: Principles and Methods of ISO 31010

The course deals with the issues related to practical implementation of ISO/IEC 31010 standard 31010:2009 (codified by The International Organization for Standardization and The International Electrotechnical Commission (IEC)). The standard itself intends to provide support for implementation of the main, ISO 31000 standard, giving principles of risk assessment and the risk management process. The course provides information as to the selection and application of the risk assessment techniques tackled in the standards and gives ex-



amples of application of single methods/techniques in engineering, insurance, finances and general risk analysis.

B9-3: Quantitative Risk Assessment and Advanced Applications

The course presents an introduction to Quantitative Risk Analysis, thus illustrating the necessary steps for the calculation of risk indexes. Practical approach to frequency calculation and consequence assessment, including vulnerability models, will be discussed. A specific focus on domino effect and accidents triggered by Natural-Technological (Na-Tech) events will be presented.

B9-4: Emerging Risks

The course introduces and transfers knowledge on emerging risks and management of emerging risks. The risks considered as "emerging" are primarily the risks previously not recognized as such, e.g. the risks due to new processes, new technologies, new ways of working or risks due to social or organizational changes (the risks linked to nanotechnologies, bio-technology, new chemicals, outsourcing, globalization are practical examples tackled within the course). The risks due to the change in public perception or new scientific knowledge are considered as well.

Module X: Business Continuity and Project Risk

Credit Points: 6 | Module type: compulsory

The aim of the module is to understand and also to implement the basic concepts, methods, products and measurement techniques of financial risk. Practical examples with the state-of-the-art tools are applied by the student in terms of self-study and independent work. It complements other courses devoted to technical and engineering issues of risk management in industrial plants (petrochemical plants, process industry, power plants, etc.). Technical risks in the above plants can be a cause or a contributing factor in/for the business continuity and the final outcome of the technical/engineering activities is practically always to be seen on the background of business implications and implications/impacts to the business activities of a company. The insurance aspects are the most relevant practical aspect linking the engineering and business side of the company operation and asset management: therefore these will be tackled, too.

B10-1: RMS: Risk Management Strategies

This course will focus on the basic concepts, methods, products and measurement techniques of financial risk. The presentation of scenario analysis, simulation techniques as well as the Value-at-Risk concept and calculation will show the specificity of the financial field and the related risk management strategies.

B10-2: Workshop: Business Continuity and Financial Risks

Practical examples with the state-of-art tools are applied by the student.

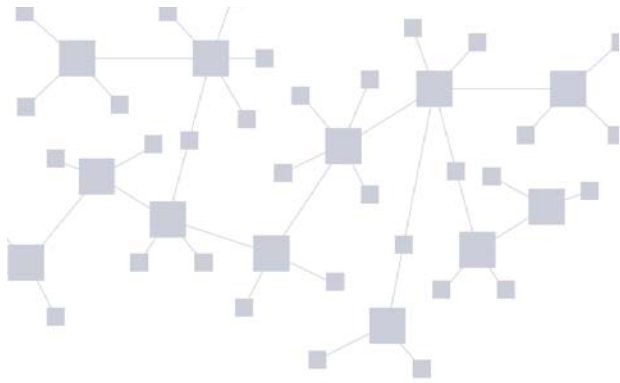
B10-3: BUSINESS: Business Continuity Risks & Insurance

Complement other courses devoted to technical and engineering issues of risk management in industrial plants (petrochemical plants, process industry, power plants, etc.). Technical risks in the above plants can be a cause or a contributing factor in/for the business continuity and the final outcome of the technical/engineering activities is practically always to be seen on the background of business implications and implications/impacts to the business activities of a company. The insurance aspects are the most relevant practical aspect linking the engineering and business side of the company operation and asset management: therefore these will be tackled, too..

B10-4: Safety and Reliability Analysis

This course presents the basic theory for safety and reliability analysis. The starting point is definition and discussion of basic concepts related to reliability and risk analysis. Then qualitative techniques like functional analysis, FMECA and identification and evaluation of faults and hazards are introduced. The next step is to introduce familiar quantification techniques like reliability block diagrams, fault- and event tree analysis, and Markov methods. Special attention is paid to safety-critical systems (IEC 61508) where analysis of systems with common cause failures is important. The course ends with methods for estimation of failure rates and a survey of reliability data sources.





MAIN LECTURERS

Lecturers of the courses are leading experts in their corresponding fields. They possess both academic and practical background, which provides the genuineness of the study program. This combination allows students to absorb working knowledge fast and to gain skills for practical implementation and relevant problem-solving. Take a look to an excerpt from the lecturers list below.



Prof. Dr. Marco Gerbec

Professor at Jožef Stefan International Postgraduate School and senior researcher at Jožef Stefan Institute, Ljubljana, Slovenia. More than 15 years of experience in management of major accident hazards (process safety), risk assessments, expert reviews, as well as in consultations to the national competent authorities, and local industrial companies. Involved in a number of EU projects and actions. Lectured in Germany, PR of China, Serbia, Turkey and South Africa.



Prof. Dr. Aleksandar Jovanovic

Full professor at Steinbeis University Berlin and University of Novi Sad, Director of Steinbeis R-Tech group, CEO of European Virtual Institute for Integrated Risk Management (EU-VRI) and EU Project Director and lecturer at ZIRIUS (Center for Interdisciplinary Risk and Innovation Studies, University of Stuttgart). He has a long-year professional experience in the area of innovation management, new technologies, business risk management, structured project management, etc.



Prof. Dr. Dr. h.c. Dirk Linowski

Director of the Institute of International Business Studies and Full Professor at the Chair of Asset Management at Steinbeis University Berlin, Germany. In addition, permanent guest professor in Corporate Finance and Financial Economics at the Tongji University in Shanghai, in Financial Risk Management at the Shanghai Normal University, China, and in International Finance and Financial Risk Management at the Riga Graduate School of Law, Latvia. Among his expertise are topics such as applied mathematics, financial economics, accounting and financial risk management.



Prof. Dr.-Ing. habil. Karl Maile

Former director of the Material Testing Institute and former professor of the University of Stuttgart, Germany. Visiting Professor at the North China Electric Power University. His main research fields are material science, testing and quality assurance, life assessment of industrial plants; surface technologies. He has more than 300 publications in those topics. Prof. Maile was member and panelist of several organizations such as DGM, VdEh, VGB, national standardization bodies.



Prof. Dr. Dr. h.c. Ortwin Renn

Full professor and Chair of Environmental Sociology and Technology Assessment at Stuttgart University in Germany. He directs the Stuttgart Research Center for Interdisciplinary Risk and Innovation Studies (ZIRIUS) and the non-profit company DIALOGIK, a research institute for the investigation of communication and participation processes in environmental policy making. His research interests are risk governance, political participation and technology assessment.



Dr. Reto Schneider

Head of Emerging Risk Management at Swiss Reinsurance Company (Swiss Re). In this function he is responsible for collecting early notions of Emerging Risks and horizon scanning. His expertise is in assessing General Liability and Product Liability risks in various industry segments ranging from Life Science to Oil and Petrochemical companies. He holds a diploma in cell biology and a PhD in natural sciences of the Swiss Federal Institute of Technology in Zurich.



Dr. Ing. Giovanni Uguccione

Business Development Manager at D'Appolonia SpA in Italy, formerly head of the the Risk Analysis Unit in Snamprogetti SpA and HSE Technical Manager in D'Appolonia. His professional expertise covers risk analysis and risk assessment, including hazard identification methods, Fault Tree Analysis, modelling of accidents and development of Safety Reports under the "Seveso" Directive. He has participated in EU and Industry funded Projects for the development of Risk Analysis and consequence modeling.



Prof. Dr. Udo Weis

Professor for Business Administration and Engineering, director at Steinbeis Institute Advanced Risk Technologies, CEO of IFNEK GmbH and currently the Chairman of the National Standards Committee for Risk Management and a member of other international standardization bodies to risk management. For several years he acts as president of Germany's largest expert association VDSI, with more than 5,000 EHS professionals. He worked as head HSE department at ABB being responsible for 20 countries and is member in several advisory committees.

NETWORK & KNOW-HOW

The involvement of Steinbeis Advanced Risk Technologies in over 50 European, international and large-scaled industry projects is a key asset of the Institute. Today there are Steinbeis enterprises in 15 countries. In addition, project and co-operation partners in further 48 countries complement our network of experts.

- It allows us to strengthen our network of experts and lecturers.
- Projects results as well as know-how are often transferred in the courses' contents ensuring that they always remain state-of-the-art.
- If you can't find a sponsoring company, some of those projects can serve as a basis for the Project Competence Concept underlying every Master program.

Example: RBI in Power Plants in South Africa - Eskom

A certified Risk Based Inspection (RBI) programme as part of a plant life cycle management strategy.

www.eskomrbi.risk-technologies.com

Example: RBI in Petrochemical Industry - Gazprom

Risk management and use of risk-based approaches in inspection, maintenance and HSE analyses of petrochemical plants in Serbia.

<http://risknis.risk-technologies.com/>

Example: EU-project iNTEg-Risk

Early Recognition, Monitoring and Integrated Management of Emerging, New Technology related Risks

www.integrisk.eu-vri.eu

Example: DEG-project SafeChina

Promoting the EU and German standards and practices of Environmental Protection and Industrial Safety in China.

www.safechina.risk-technologies.com

Example: EU-project EDEN

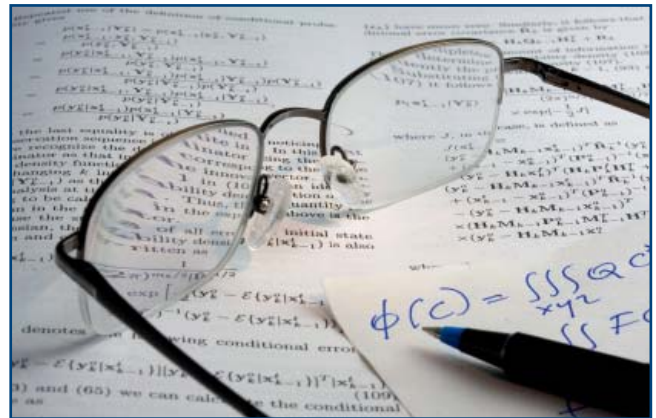
Improve CBRNE resilience through the adaptation and integration in complex multi-national/agency CBRNE operations.

www.eden-security-fp7.eu

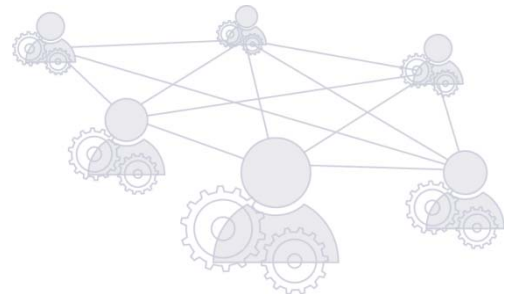
Example: EU-project EuropeAid Turkey

Strengthen the institutional capacity of central bodies that are responsible for future implementation of the Seveso II Directive in Turkey.

www.europeaidturkey.risk-technologies.com



The program welcomes students from all over the world, that creates a unique international atmosphere and benefits for the student



PROGRAM PARTNERS

The European Master and Certification Program has been realized in close collaboration with universities, R&D institutions and industrial companies worldwide. Since its creation the Institute cooperated with the following organizations.

- CNR (Italy)
www.cnr.it
- EnBW (Germany)
www.enbw.com
- Eskom (South Africa)
www.eskom.co.za
- INERIS (France)
www.ineris.fr
- Josef Stefan Institute (Slovenia)
www.ijs.si/ijsw/JSI
- NIS Gazprom (Serbia)
www.nis.eu
- SINTEF (Norway)
www.sintef.no
- Swiss Re (Switzerland)
www.swissre.com
- Steinbeis Advanced Risk Technologies GmbH (Germany)
www.risk-technologies.com
- University of Bologna (Italy), www.eng.unibo.it
- University of Magdeburg (Germany) www.ovgu.de
- University of Pisa (Italy)
www.unipi.it
- University of Stuttgart/ ZIRIUS (Germany)
www.zirius.eu

HOW AND WHEN TO APPLY

Applications to the Master and Certification Program are open the whole year long.

Winter semester: October 1 - March 31
Summer semester: April 1 - September 30

Applications are handled via:
admissions@risk-technologies.com

Send us an email with:

- your CV in the EuroPass format
 - a letter of motivation
 - university diploma(s)
 - university grades transcript(s)
- English language certificate (if not native speaker)

COURSE VENUES

During the lecturing periods, courses are held in one of our venues in Stuttgart. All locations are best equipped and provide a motivating learning environment.

Steinbeis-Haus für
Management und
Technologie (SHMT)
Stuttgart



Haus der Wirtschaft
Stuttgart



Lange Straße 54
Stuttgart

CONTACT

For general enquiries

If you have questions, need information or would like to be supported to find a project in an organization, please contact

Mr. Nicolas Schmid
nschmid@risk-technologies.com
+ 49 711 410041 32

For Partnerships & professional training

If you're interested in the professional training opportunities, Project Competence Concept, or if you have questions please contact

Prof. Dr. -Ing. Aleksandar Jovanovic Prof. Dr. Udo Weis
jovanovic@risk-technologies.com weis@risk-technologies.com
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