CENTRAL BALTIC
INTERREG IV A
PROGRAMME
2007-2013

EUROPEAN UNION
EUROPEAN REGIONAL DEVELOPMENT FUND
INVESTING IN YOUR FUTURE

Curricula module implementation plan

Oil spill response curricula module

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Introduction

Before the beginning of EnSaCo project appeared need for development of oil spill response curricula module (Annex 1) for enhanced management level competence. Currently, the existing training programmes in this field embrace mostly specific subjects and target groups. For instance, short courses for rescue services, police and border guards as well as volunteers exist in the Baltic Sea region. Simultaneously, background studies brought out, that no comprehensive high level training curriculum covering this field exists in the countries of the region. The results of the analyses of pollution case reports demonstrated an urgent need for an extensive course programme, enabling the specialisation of marine and coastal pollution prevention, control and response.

This is the reason why EnSaCo partners from Estonia, Finland and Sweden developed oil spill response curricula module possible to implement in all states around Baltic Sea.

The main idea of the curriculum is to manage the full cycle of the emergency management. Following is given an overview of the curriculum through four main steps:

1) Prevention and mitigation as risk managing. The main points are to provide an understanding of the uniqueness of the flora and fauna in the Baltic Sea area as well as the possible impact in case of pollution with dangerous substances and possible accidents.

   The main objectives are:

   a. Baltic Sea and living environment: To provide the students with an aim of the coastline and the beach of Estonia and to give an overview of the individual characteristics and peculiarities of the living environment in the Baltic Sea.

   b. Dangerous goods and safety technique: To provide the students with knowledge of dangerous goods, which are transported at sea, their identification and neutralization.

   c. Maritime traffic in the Baltic Sea: To provide an overview of the main topics of the maritime traffic in Baltic Sea; possible polluters and their response.

2) Preparedness and detection as a necessary legislative base and technical equipment. The main points are focused on equipment and techniques for detecting, monitoring and acting. The objectives are:

a. Detecting pollutants and response authorities. International co-operation: To provide an overview of oil spill detection methods, response authorities and international co-operation in the area of the Baltic Sea.

3) Response and action in case of accident

a. Oil spill response work at the sea: To provide an overview of the oil spill response activities and authorities responsible for response at sea.

b. Oil spill response works in coastal waters: To provide an overview of the oil spill response work and authorities in coastal waters.

4) Recovery, cleaning and investigation.

a. Practical shorelines clean up: To provide an overview of the oil spill response work and authorities on the coast.

b. Wildlife Response and Preparedness: To provide an overview of the wildlife rescue methods and techniques.

c. Investigation and criminal response for polluters: Rules of investigation, detention and arrest of vessels as well as composing maritime claims against ship owners and crew in cases of illegal dumping and pollution of the marine environment

Main aim of this curricula implementation plan is to present possible methods of oil spill curricula module implementation in Finland, Estonia and Sweden.

1 Overwiev for implementation of curricula module

The objectives of the curricula module development are brought out as follows. Firstly, to provide an extensive background knowledge in the field of pollution. Secondly, proportional coverage of all steps of accidental pollution management, including: prevention, mitigation, emergency planning and recovery as well as control and investigation. Thirdly, a balanced approach to marine and coastal pollution and fourthly, international applicability and cooperation.

1.1 Methodological approach of curricula module development

The essential principle of the curricula module development was based on the cyclic character of the oil spill management process. While working out the curricula module and its application and implementation mechanisms were used the principles of the following models. Firstly, the four-step circle of emergency management (Figure 1), as recommended by the EU Civil Protection[1] and Schwab. Eschelbach & Brower[2].

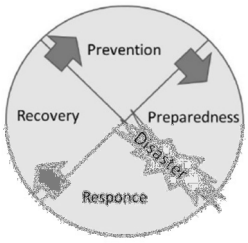

Figure 1. Emergency management cycle

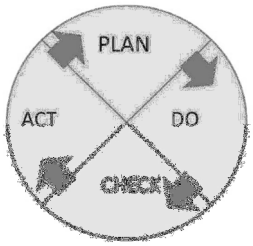

Figure 2. PDCA model

Secondly, the well-known Plan-Do-Check-Act (PDCA) model (Figure 2), widely used in several management processes, standardised by ISO[3] and also being applied by some authors in the field of emergency response[4]. Additionally were observed similar cyclic models; presented by Smith[5] as

[1] Prevention. Humanitarian Aid & Civil Protection, European Commission, http://ec.europa.eu/echo/civil_protection/civil/prevention_overview .htm

[2] Schwab, A. J., Eschelbach, K. & D. J. Browner, *Hazard mitigation and Preparedness*, Wiley, 2007.

[3] ISO 9001:2008 Quality management systems. Requirements with guidance for use. ISO 14001:2004 Environmental management systems. Requirements with guidance for use.

[4] Kubo, T., Hisada, Y., Murakami, M., Kosuge, F. & Hamano, K, Application of an earthquake early warning system and a real-time strong motion monitoring system in emergency response in a highrise building. Soil Dynamics and Earthquake Engineering, 31, pp. 231-239, 2011.

well as the special accidental spill response cycle diagram, developed by Kirby and Law[6]. The emergency management cyclic model(s) served as an example mostly for the curriculum design and the PDCA model for compiling the application mechanism.

1.2 Teaching methodology and curriculum application

Teaching could involve three main methods: theoretical, virtual simulation and practical training.

Theoretical studies could involve the entire emergency management cycle in the context of accidental marine and coastal pollution. An important difference from short-time courses is the approach to give students a comprehensive background about the unique character of the Baltic Sea and its flora and fauna. Other important topics, highlighted during the study, will be marine traffic arrangement and accidents, including accidents with dangerous goods, including oil products, observed in subdivision. Special attention is given to cooperative mechanisms for pollution management and control. The regulation and organization topics will be divided between different subjects of the curriculum.

The theoretical module of the curriculum could be mainly e-learning. All the teaching materials should looked over, assessed and improved during the curriculum improvement process, considering the latest achievements of research and development in corresponding fields.

Virtual studies embrace the modeling of tanker accidents, oil spills and associated accidental pollution scenarios. These studies could be conducted on the basis of the virtual simulation tools like for example Transas PISCES software or some other simulation software allowing modeling tanker accidents in real weather conditions, defining exactly the dangerous goods and tanker coordinates. There should be possible to model the scenario of a specific case and to see when and where the pollution may be offshore, on-shore or already at the shoreline.

Practical training could be organized on the basis of laboratory and field works concerning dangerous goods and partially in cooperation and with the assistance of several organizations responsible or involved in oil spill response operations in real cases.

The curriculum application process can be planned in two phases: an experimental phase (further also: small cycle) and full-scale application phase (further also large cycle).

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[5] Smith, K., Environmental Hazards: assessing risk and reducing disaster. London & New York: Routledge, 2001.

[6] Kirby, M. F. & Law, R. J., Accidental spills at sea – Risk, impact, mitigation and the need for co-ordinated post-incident monitoring. Marine Pollution Bulletin 56, pp. 1243–1247, 2008.

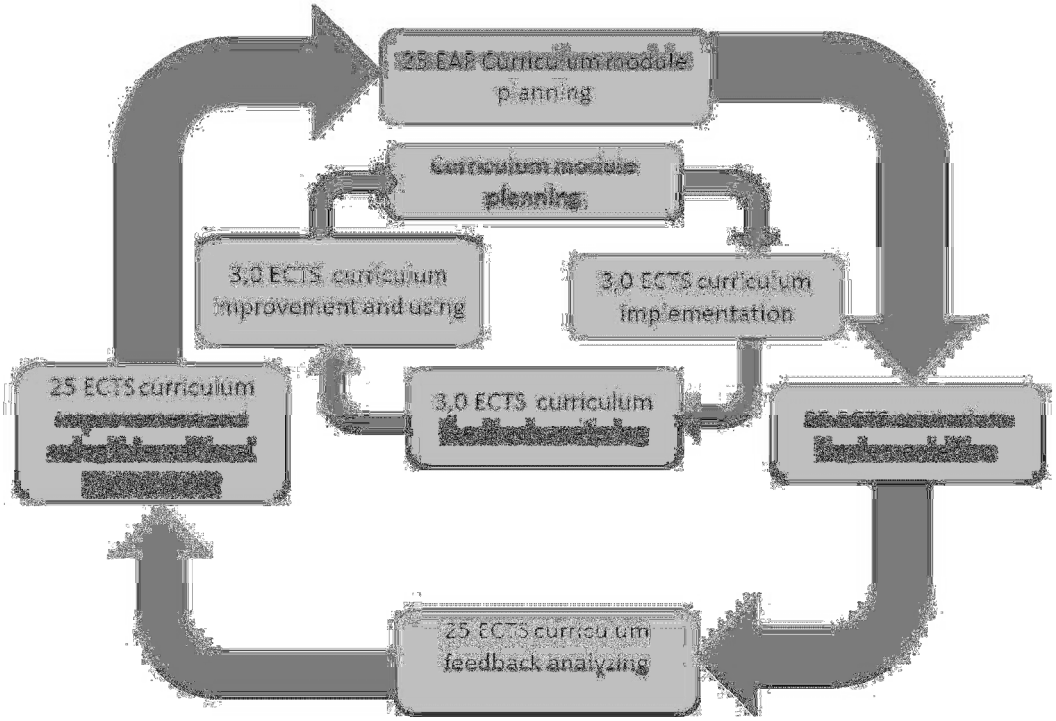

Figure 3. Planning the curricula module implementation process

Both phases are conducted, following the PDCA principles in specific context:

- PLAN – planning of the course(s),
- DO – curriculum implementation, including carrying out of the training;
- CHECK – analysis and assessment of the feedback information, concerning the achievements of the objectives and possible non-conformances to the planned actions;
- ACT – improvement and further development actions.

The PDCA approach in the current context could provide a good compatibility with the quality management of the higher education institutions around the Baltic Sea.

2 Planned curricula module implementation in different countries

The countries in the central Baltic region are organized differently and the responsibility of the shoreline oil spill response differs between Estonia, Finland and Sweden. The EnSaCo project and particularly WP5 (Learning arena for oil spill response management and communication) has aimed to harmonize the educations between the countries. The objective has been to facilitate cross-border cooperation and giving and receiving assistance between the countries in case of major oil spill accidents.

This is also the reason why implementation ideas for different countries differ, but the main aim was to develop an oil spill response curricula module possible to implement in different countries around Baltic Sea and for this could be used the overall implementation methodology introduced under previous chapter.

2.1 Implementation in Estonia

EnSaCo oil spill response curricula module for Estonia was closely developed in co-operation with Estonian Maritime Academy and Estonian Academy of Security Sciences. As a result it is suggested to implement oil spill response curricula module by Estonian Maritime Academy and Estonian Academy of Security Sciences as joint curricula module integrated info Master's studies curricula named internal security (Annex 2). Curricula module is planned to implement according to the methodology described in previous chapter.

The prerequisite for commencing studies on the Master's level is a Bachelor's level degree, professional higher education or an equivalent qualification and at least two years of experience in the field. A student is obligated to choose subjects in the capacity of at least 25 ECTS from among the specialty related elective subjects provided in the curriculum. The curriculum is focused on different activity parts in cases of accidents.

The experimental application phase (short-time course: 3 ECTS; small cycle) is intended to take place already in spring 2012 and the course is designed for the students of the Estonian Academy of Security Sciences and Estonian Maritime Academy as well as for the specialists of oil spill response from Estonian Rescue Board. The first application phase 3 ECTS implemented 2011/2012 in spring semester. The practical application phase (full-scale implementation: 25 ECTS; large cycle) will hopefully take place during year 2014-2015. Future direction in case of success is the attribution of

an international dimension with the involvement of foreign students and possible training in cooperation with suitable schools or universities and other institutions from EnSaCo partner countries.

2.2 Oil spill curricula module implementation in Finland

In Finland, at the Emergency Services College, oil spill training is a part of the environmental safety course, taught together with other types of environmental accidents and response efforts[7]. Another example, from Finland are short-time courses, lasting up to one day, for different target groups of volunteers, organized by World Wildlife Fund (WWF)[8]. The Kymenlaakso University of Applied Sciences has worked out a training curriculum for coastal pollution, consisting of four levels and targeted to oil spill response trainers from rescue services and other institutions[9].

Due to this in Finland are several organizations what could offer oil spill response education and what could be intrested of implementing the curricula module into their study programmes. Organizations suggested by EnSaCo Finnish partner are as following:

- Turku University of Applied Sciences www.tuas.fi;
- Kymenlaakso University of Applied Sciences www.kyamk.fi;
- Emergency Services College www.pelastusopisto.fi/;
- Aboa Mare Maritime Education www.aboamare.fi;
- Satakunta University of Applied Sciences www.samk.fi;
- Laurea University of Applied Sciences http://www.laurea.fi.

2.3 Swedish implementation plan of the oil spill curricula module

2.3.1 Background

In Sweden the municipalities have the responsibility to control a shoreline oil spill response. This means in practice that all coastal municipalities must have sufficient knowledge and education in order to be able to manage the accident in a satisfactory way.

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[7] Palopäällyston koulutusohjelma: opetussuunitelma [The Fire Officer's Training Programme: Curriculum], http://www.intermin.fi/pelastus/images.nsf/files/0B00E767C40E4EC8C22575C200354FB0/$file/amkN9%20ops.pdf

[8] Vapaaehtoiset öljyntorjuntajoukot [Volunteer oil spill response forces]. World Wide Fund for Nature Finland, http://wwf.fi/maapallomme/itameri/merenkulun-turvallisuus-jaoljyntorjunta/oljyntorjuntajoukot /

[9] Alusöljyvahingon rannikotorjunnan koulutussuunitelma. [Marine oil accident coastal combat training curriculum]. Kymenlaakso University of Applied Sciences, Kotka: Tammerprint, 2011.

Oil spills are only one of many types of accidents that the rescue services need to have a capacity for. Many will never experience a large-scale oil spill during their entire career since these accidents, luckily, are rare to their nature.

The education system regarding shoreline oil spill response in Sweden is therefore aimed to attain basic information to a large number of people, both in the rescue services and in other functions in the municipality as well as other concerned governmental and non-governmental bodies. According to the Swedish model the local level needs to be able to provide a "first aid kit" in case of a large-scale spill, where after governmental support can be attained.

However, in order to reach the objective of facilitation of cross-border cooperation it is important that all coastal municipalities continuously will get access to the basic level of knowledge.

2.3.2 MSB is a provider of oil spill response education

MSB provides a variety of courses on shoreline oil spill response. The target group is particularly the municipalities and other concerned stakeholders on the local level as a vocational training. These courses are continuously updated with the latest information.

Course no	**Course title**
Course 1	Environmental impact and policies
Course 2	Limiting and recovery of the oil spill
Course 3	Management of the clean-up operation
Course 4	Command support for staff

MSB is also the facilitator of the basic education toward the rescue services (SMO). This education also includes advanced levels toward rescue leaders who are in charge of the oil spill response operation.

The oil spill response curricula module which has been developed within the EnSaCo project includes 9 different subjects, see table below. An analysis has been made regarding the content and the subjects have been localized in different parts of the education. Most of the 9 subjects are dealt with in these courses and educations. See comments in the table.

However, much of the Swedish education is on a more shallow level than the curriculum suggests.

Curriculum subject	Swedish equivalent
1. Maritime traffic in the Baltic Sea	Course 1, SMO
2. Baltic Sea Living environment	Course 1 and 3, SMO
3. Dangerous goods and safety technique	Not included as a component. But is touched briefly in the SMO
4. Detecting pollution and response authorities. International co-operation	Course 1 and 3, SMO
5. Oil response work at sea	Course 1, SMO
6. Oil spill response works in the coastal waters	Course 3, SMO
7. Practical shoreline clean up	Course 2, SMO
8. Wildlife response and Preparedness	Course 1
9. Investigation and criminal response for polluters	Not included as a component. But is touched briefly in the SMO. Swedish Coastguard and Police are responsible.

2.3.3 Conclusions of oil spill response education implementation in Sweden

To this background there is no need for specialists in shoreline oil spill response in Sweden, which would have an academic orientation toward oil spill response. There is no desire to change the Swedish system. Since the municipalities and particularly the local rescue services are responsible of the oil spill response focus needs to be on maintaining an acceptable level of knowledge and expertise on the local level in Sweden. It is also questionable where these academic oil spill response experts would be employed in Sweden. There is no obvious labor market for this kind of specific expertise.

It is very valuable to continue to share information between the Baltic Sea countries. When a large scale accident occurs we need to be able to grasp how the other country works and which

organizations are responsible. It does not mean we need to do everything in the same way, rather to keep on training together and learning more about each other.

3 Annexes

3.1 Annex 1. Curricula module „Oil Spill Response“

IV. The module of oil spill response 25 ECTS		
4.1. Maritime traffic in Baltic Sea	3	A
Objective of the subject: To provide an overview of the main topics of the maritime traffic in Baltic Sea; possible polluters and their response. Upon successful passing of the subject, the student: ▪ Knows the principles of navigation in the Baltic Sea and its regulations; ▪ Is familiar with the main rules of maritime traffic and accidents in the past; ▪ Is familiar with the communication problems related to maritime traffic and has the overview about the vessels reporting system in the Gulf of Finland; ▪ Has the overview of the maritime traffic frequency in the Baltic Sea and about the different types of cargoes transported in the Baltic Sea		
4.2. Baltic Sea and living environment	3	E
Objective of the subject: To provide the students with an aim of the coastline and the beach of country and to give an overview about the characteristics and peculiarities of living environment in the Baltic Sea. Upon successful passing of the subject, the student: ▪ Knows the different coast and shoreline types and has an overview of environmental sensitivity and mapping; ▪ Knows the most common populations in the sea and the possible effects of oil spill; ▪ Is familiar with the legislation of marine environment protection and organization; ▪ Is familiar of the oil spill consequences to the marine environment.		
4.3. Dangerous goods and safety technique	3	E
Objective of the subject: To provide the students with the knowledge of the dangerous goods, their identification and naturalizing which are transported by sea. Upon successful passing of the subject, the student: • Knows the possibilities to identify dangerous goods; • Is able to use methods for identification most common dangerous goods; • Knows the main risks and consequences, safety management and techniques for working with dangerous goods;		
4.4. Detecting pollutions and response authorities. International co-operation.	4	A

Objective of the subject: To provide an overview of the oil spill detecting methods, response authorities and international co-operations in the area of the Baltic Sea. Upon successful passing of the subject, the student: • Knows the main possibilities for the detecting an oil spill; • Knows the different authorities in the area of the Baltic Sea and it's costal countries responsible in the case of oil spill; • Is able to use the software of oil spill modeling; • Knows the main principles of oil spill evaluation; • Has an overview of the international co-operation in case of oil spill.		
4.5. Oil spill response work at the sea	3	A
Objective of the subject: To provide an overview of the oil spill response activities and authorities responsible of response at the sea. Upon successful passing of the subject, the student: • Is familiar with the legislation of oil spill response at the sea area; • Knows the needed oil spill response equipment and oil spill response resources and its locations; • Based on oil spill location is able to estimate the time of oil spill response equipment arrival on the scene. • Knows the co-operation system for oil spill response work at the sea; • Knows the financing, management and drilling system for oil spill response at the sea area;		
4.6. Oil spill response works in the coastal waters	3	E
Objective of the subject: To provide an overview of the oil spill response work and authorities in the coastal waters. Upon successful passing of the subject, the student: • Is familiar with the legislation of oil spill response in the coastal waters; • Knows the needed oil spill response equipment and oil spill response resources and its locations to react to the oil spill in the coastal waters; • Knows the co-operation system for oil spill response work in the coastal waters; • Knows the financing, management and drilling system for oil spill response in the coastal waters.		
4.7 Practical shoreline clean up	4	E
Objective of the subject: To provide an overview of the oil spill response work and authorities on the coast. Upon successful passing of the subject, the student: • Is familiar with the legislation of oil spill response on the shoreline; • Knows the needed oil spill response equipment and oil spill response resources and its locations to react to the oil spill on the shoreline; • Knows the co-operation system for oil spill response work on the shoreline; • Knows the financing, management and drilling system for oil spill response on		

shoreline.		
4.8 Wildlife Response and Preparedness	2	A
Objective of the subject: To provide an overview of the wildlife rescue methods and techniques. <u>Upon successful passing of the subject, the student:</u> • Knows the principles of the process of wildlife rescue; • Knows the legislation related to Wildlife oil spill response • Knows the authorities who are responsible for wildlife oil spill response and the co-operation system with other authorities in case of oil spill; • Has an overview about the volunteer troops, their duties, protective measures of volunteers and communication system; • Knows the needed wildlife response equipment and its locations.		
4.9 Investigation and criminal response for polluters	2	A
Objective of the subject: Rules of investigation, detention and arrest of vessels as well as composing maritime claims against ship owners and crew in cases of illegal dumping and pollution of the marine environment <u>Upon successful passing of the subject, the student:</u> • Knows basic international conventions dealing with protection of the marine environment (UN Convention on the Law of the Sea, Part XII; respective IMO conventions) from vessels whether intentional or accidental as well as conventions related to the maritime safety of ships • Knows about participation of national in those conventions and respective legal acts; • Knows about possibilities of a flag State to provide diplomatic protection in cases of investigations, detentions or arrests in foreign ports; • Knows about regulations in dealing with maritime casualties as well as salvage of property at sea; • Knows the international legal meaning of pollution damage and possibilities to get compensated as well as functioning of the IOPC Fund.		

3.2 Annex 2. Curricula of „Internal Security“

CONFIRMED
with the Council Decision
No 1.1-6/13 of 12.04.2011

ACADEMY OF SECIRITY SCIENCES

Institute of Internal Security

CURRICULUM OF THE MASTER OF INTERNAL SECURITY

Level of education	Master's Study
The name of the curriculum in English	Internal Security
Curriculum Code in EHIS	84938
Curriculum Group	Internal Security
The right to conduct studies	According to the "Standard of Higher Education" approved by the Government Regulation No. 191 of 23.12.2010.
The capacity of the curriculum	120 ECTS
Nominal period of studies	2 years
Forms of Study	Distance Study
Language of instruction	Estonian and English
Other languages needed for achievement of the learning outcomes	- -
Curriculum Coordinator	Shvea Järvet, the Head of the Institute of Internal Security

1. LEARNING OBJECTIVES AND EXPECTED STUDY OUTCOMES

The curriculum of Master's study aims:

- to develop a network of international cooperation for development of education on the Master's level in the field of internal security

- to create opportunities for students for acquisition of a Master's degrees in the field of internal security

- to enhance students' competence for management of the field and organizations of internal security both on the strategic and operational level to ensure security meeting the population's needs and requirements

- to develop in students the willingness to research and create new knowledge in the field of internal security

- to create for students opportunities for professional development and to extend and raise the awareness and motivation to participate in lifelong learning, including in order to continue their studies in the Doctoral program.

On completion of the curriculum of Master's study:

- is able to analyze and plan for needs of internal security and manage the activities and people, applying modern management theories and practices

- is able to manage cross agency and international cooperation in the field of internal security, knowing the system and the directions of development of internal defense organizations as well as the legislation in the area

- is competent to manage the activities and work in specific fields of internal security and related subjects

- is able to cooperate on various levels

- is able to act creatively, innovatively and flexibly in every working situation

- understands the special characteristics of public sector and bears the values specific to public service and the area of internal security

- is able to carry out research and applied research and pursue his or her studies in a doctoral program

- has a willingness for professional development in the framework of lifelong learning and for conveying his or her knowledge and experience.

2. REQUIREMENTS FOR COMMENCING STUDIES

2.1. The prerequisite for commencing studies in the Master's program is a Bachelor's degree, professional higher education or equivalent qualification and at least one year's experience in the field of internal security. The work experience requirement does not apply to a graduate of professional higher education of the Academy of Security Sciences with an average grade on the academic report of at least 4.3.

3. OPTIONS AND CONDITIONS FOR SELECTION OF SUBJECTS

3.1. . The student is required to pass all the subjects indicated in the modules I, II and IV in full.

3.2. Students shall select subjects in the capacity of at least 20 ECTS from the specialty related elective subjects offered by the curriculum (module III), and optional subjects in the capacity of 5 of the ECTS (V module) from among the optional and elective subjects provided by EASS or from other institutions of higher education in Estonia. Optional subjects may be taken from partner schools of EASS in foreign countries.

3.3. The College has a responsibility to provide all the professional electives provided in the curriculum at least once during the study period.

3.4. Opening of the elective subjects is carried out taking into account the student's wishes and the possibilities of the Academy. For opening an elective subject, at least 8 people must be registered.

4. CONDITIONS OF COMPLETION OF THE STUDIES AND THE DOCUMENTS ISSUED ON THE COMPLETION OF THE STUDIES

4.1. Graduation requirements:
4.1.1. The studies end with defending the Master's thesis.

4.1.2. A student who has passed on a positive outcome all the examinations and assessments required in the curriculum is allowed to the defending of the Master's thesis.

4.2. Upon graduation, the student is issued the diploma of Master's studies for completion of the curriculum and being granted the Master's degree and an academic transcript (diploma supplement) in Estonian and English.

STRUCTURE OF THE CURRICULUM

The name of the module/subject	EAP	E/A
THE BLOCK OF GENERAL SUBJECTS		
The management module	**20,0**	
Strategic management	6,0	E
Change management and stress management	3,0	E
Psychology of management	4,0	E
Project management	3,0	E
Financial management	4,0	E
The general module of the area of public defense	**30,0**	
International and national legal regulation of the area of internal security	5,0	E
Formation of the policy of the area of internal security and functioning of the system	5,0	E
Internal security related cooperation in European Union	4,0	E
Internal security related prevention work	3,0	E
Crisis regulation	6,0	E
Internal security and safety in a multicultural society	4,0	E
State information systems and data protection	3,0	E
THE BLOCK OF GENERAL SPECIALTY SUBJECTS		
The module of specialty related elective subjects	**59,0**	
Criminal analysis	3,0	E
Penal power and offence procedure	3,0	E
Actual problems of criminology and penal policy	3,0	E
Management of traffic safety	2,0	A
Management of community based law enforcement	3,0	E
International organized crime	2,0	A
Management of innovation	2,0	A
Operational communications	2,0	A
Risk management	2,0	A
Crisis management	3,0	E
Crisis communication	2,0	A
Psychology of crisis	2,0	A
Border Guard theory and tactics	3,0	E
Schengen legal space	3,0	E
Politics and Surveillance of migration in EU	2,0	A
The current legal issues upon execution of imprisonment	3,0	E

Management of prisons and personnel policy	2,0	A
EU customs policy and customs surveillance	3,0	E
Identification and inspection of strategic goods	3,0	E
Study of teaching	3,0	E
Practical studies of Internal Security	3,0	A
Integrated Border Management	2,0	A
Special course of Security	3,0	E
The module of research work	**45,0**	
Philosophy of science	2,0	A
Methodology of research work	4,0	E
Data analysis	3,0	E
Academic writing	2,0	A
Research seminar I	2,0	A
Research seminar II	2,0	A
Master's thesis	**30,0**	E
Module of open subjects	**5,0**	