



PROVISIONAL LISTS OF PUBLIC HEALTH CORE COMPETENCIES

**European Public Health Core Competencies
Programme (EPHCC) for Public Health Education**

Phase 2

Association of Schools of Public Health in the European Region (ASPHER)

Publication No. 4

ASPHER's European Public Health Core Competencies Programme (EPHCC) for Public Health Education

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Work group participants and conference work group participants

The programme work groups include 94 teachers and scientists (see Phase 1 Report, www.aspher.org). There were 85 public health stakeholders and school of public health representatives at the Aarhus conference April 2008 (see the conference report at www.aspher.org).

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Programme summary

- **Aim**

Development of lists of competencies aimed at in European PH education.
- **Duration**

Initially three years. Continued development based on collaboration between public health schools and national and international public health stakeholders.
- **Initial phases**
 1. *June-October 2007*: Development, by ASPHER members, of provisional lists of competencies – a mapping exercise. Report available at www.aspher.org.
 2. *November 2007-September 2008*: Further development of lists of competencies in cooperation with PH stakeholders and in the light of Public Health functions.
 3. *October 2008-September 2009 – and further on*: Further inclusion of competencies; classifying competencies according to region and educational level.
- **Publication**

Printed and circulated reports at the end of each phase.
- **Acceptance by ASPHER members**
 - a. Discussions at Deans' and Directors' Retreat each year, at the annual conference by the end of each phase, and continuously among members.
 - b. Acceptance by the General Assembly at the end of Phase 3.
- **Discussions with public health stakeholders**

Phase 2 and 3 - and onwards.
- **Conferences**

First European Conference on Core Competencies in Public Health Education, 10-11 April, 2008, Aarhus University, Aarhus, Denmark. Report available at www.aspher.org.

Second European Conference on Core Competencies in Public Health Education, 30 October, 2008, EHESP, Paris, France. Details available at www.ehesp.fr.
- **Organisation**
 1. Six work groups, representing the major PH fields and disciplines:
 - a. Teachers/scientists from member schools;
 - b. Representatives of stakeholders (Starting in Phase 2);
 2. Initial coordination by the Executive Board Finance Committee, in this context chaired by either the Vice President or the President.

Introduction

What the lists in this report are, and what they are not – and the process of the programme

This report presents results from the second phase of the competencies programme of the Association of Schools of Public Health in the European Region (ASPHER, representing 73 European schools of public health). During Phase 2, lists of competencies for public health education have been developed by adding competencies suggested by participants of the *First European Conference on Core Competencies for Public Health Education*, 10-11 April, 2008, at Aarhus University, Aarhus, Denmark ¹, to the lists of competencies reported by the members of the original six work groups during the programme's Phase 1 ².

The aim of the Aarhus conference was to support and develop the dialogue between, on one side, public health decision makers and managers and, on the other side, schools of public health, as concerns competencies necessary for public health professionals in order that they will be able to develop, organise, implement, carry out and evaluate public health interventions relevant for meeting present and future challenges to European populations' health. At the conference, also other than ASPHER's provisional lists of competencies were presented, namely the list produced by the European Centre for Disease Prevention and Control (ECDC) ³ and the UK Public Health Skills and Career Framework ⁴. In addition to representatives of schools of public health, the conference was attended by representatives of European Ministries of Health, employers, and other public health stakeholders including international organizations, in total 85 persons from 27 countries.

In accordance with ASPHER's competencies programme, the lists in the present report do not pretend to represent a final or authorized classification or system, which may be applied straightaway in public health education. Phase 1 and Phase 2 of ASPHER's competencies programme have been, first of all, phases of collection and thus they have been very inclusive. They are meant to reflect, as broadly as possible, what is actually going on in European schools of public health, and how public health stakeholders think about this and about public health challenges in relation to the need for public health functions and for competencies in public health professionals.

Thus, the overall aim of the two phases has been simply to collect competencies – as suggested by teachers and scientists at the schools and by decision makers and other stakeholders. All suggestions for competencies relating to the public health universe have been accepted in these two phases of collection, which have been necessary parts of a wider process. It is our hope that this process will be maintained and further developed in the future.

Phase 2 will end at The *Second European Conference on Core Competencies for Public Health Education* as part of the *First European Meeting of EHESP School of Public Health* to be held in Paris 30-31 October, 2008, hosted by Ecole des Hautes Etudes de Santé Publique, Paris and Rennes (www.ehesp.fr). Besides presenting the competencies model applied by the Association of Schools of Public Health (ASPH), USA,⁵ the conference will focus on competencies necessary to meet the challenges of the increasing obesity epidemic, of ageing, and of emerging infectious diseases. The conference has been authorized as one of the events associated with the French Government's EU Presidency in the last part of 2008.

Before that, the lists will be tested by applying them - and also the competencies of the UK Public Health Skills and Career Framework⁴ - to selected public health challenges, at two workshops, one in Hamilton, Scotland, and one in Maribor, Slovenia. Besides organisers of the workshops *, the group of participants will include public health decision makers and representatives of schools of public health. Experience from these workshops will be presented and discussed at the Paris conference. - This method of national or even local, workshop based collaboration between schools and stakeholders could turn out to be a key procedure in the development of our comprehension of competencies needed to meet down-to-earth public health challenges demanding responses based on scientific research. Thus we hope for more workshops in European countries in the future.

Thus, the present lists are by no means complete. Besides collection and formulation of further competencies, the subsequent Phase 3 will have to focus on precise but flexible classifications and logical structures as concerns further subdivision of the six themes. Also stratification according to educational level - whether bachelor, graduate master, Ph.D. or postgraduate master (the classical MPH) – should be considered.

In their present form, the lists represent what can be achieved by merely collecting and then adding just a relatively limited amount of classification – and a still smaller amount of removal of suggested competencies, which could seem to overlap. By more detailed scrutiny and discussion some seemingly overlapping suggestions could however show to be competencies in

*) Christopher Birt, ASPHER EB member, is acknowledged for his leadership in organizing the work groups, and Matthieu Pegorie, Donald Read and Paula Whittaker, public health trainees, for their devotion and professionalism in developing high quality competency materials and frameworks for the workshops. We are grateful for the excellent collaboration and support from Professor Mala Rao, Previous Head, Public Health Workforce and Capacity, Department of Health in England, Jennifer Wright, Director, Public Health Resource Unit (PHRU), and for all the help and support offered and provided by Igor Krampac and Olivera Stanojevic of the Public Health Department in Maribor, Slovenia, and by Gabe Docherty, Lesley Armitage and Ann Moss of Lanarkshire Health, Scotland.

their own right. Thus, respectfulness between colleagues and between professional cultures has been a key concept. A 'top down' model – however precise and sophisticated - prescribed by a group of specialists could not be expected to work in the real world. A collective process is needed, based on common expertise, in order to ensure both relevance and proper implementation – at the local, national and international level.

The present lists – which actually are the first of their kind – should be understood in this light. Hopefully they will form a productive basis for the further development of lists and for more precise classifications of competencies, which could then be expected to be expressed in more comprehensive and precise logical structures with mutually exclusive categories - as far as this will be possible also from the point of view of differences of professional culture.

The need for lists of competencies to be flexible

Population health challenges vary over time and across borders, and there are outspoken contrasts between European countries as concerns their health systems. Public health professionals' competency profiles have to reflect these variations in order that they can meet challenges in an adequate manner. Competencies in public health educational programmes – whether bachelor, graduate master, Ph.D., or postgraduate master programmes – thus have to reflect population health and health systems dynamics. Moreover, public health professionals necessarily must be life-long learners.

These challenges and their variation over time and across regions can be systematized in many ways. Thus, also the six work groups of the Aarhus conference aimed at considering challenges like:

- Challenges in population health developments, present and future, across Europe;
- Challenges in health systems, present and future, across Europe - services, planning, economy and management: Health service systems, incl. health care; primary, secondary and tertiary preventive systems; systems for health promotion; social service systems; environmental systems; other systems with population health impact;
- Challenges as concerns the production of knowledge:
 - Applied decision supporting knowledge: Surveillance of population health; monitoring the functioning of health systems;
 - Public health science;
- Public health functions;

- The public health labour market;
- Collaboration with the lay public and with other professions;

As suggested also by conference work groups, a matrix structure of the lists could be a relevant solution to the challenge of the shown multi-dimensionality and cross-disciplinarity of the public health universe. A matrix structure could be flexible and could, at the same time, remedy some of the repetitiveness. For instance, there will be ethical dimensions in all of the main themes without this necessarily having to be repeated under all of the six thematic headlines. Probably, similar considerations would be applicable to a not negligible proportion of the competencies listed in this report.

Thus there is a need to discuss whether overlaps between the six main themes could and should be maintained or not. Moreover, overlaps between these main themes actually reflect traditions in the concrete practice of disciplines. Consequently, some competencies, e.g. concerning analytic skills, will to some extent be found in the methods section of this report, the social background section, the physical background section, and the prevention and health promotion section as well. As mentioned, this could of course be simplified and repetitions of competencies removed by applying a matrix structure. But – in spite of its virtues when it comes to logics - can such simplification actually be expected to be accepted by the involved disciplines? They will be the users of lists of competencies. Clearly, this can and should not be answered without the necessary inter-professional and cross-disciplinary discussions. Such discussions – and other discussions concerning the logical structure of the lists – must have high priority in the future.

Another theme for discussion has been the number of details: Should the lists focus strictly on core competencies alone, or should they include details – and then: how detailed details? There is however no universal agreement when it comes to defining what is a detail and what is not. Educational programmes teaching identical disciplines at the same level actually may demonstrate large variations in their detailing of component competencies. This may have many causes, one being that challenges to population health vary across regions.

This is exactly why we have found it prudent to start with two programme phases mainly aiming at the collection of empirical data - detailed as well as less detailed. Future discussions about what are core competencies and what are more detailed and maybe even more flexible competencies and competency profiles will be crucial.

Finally, work group members have underscored that the lists should have a balanced relation to the philosophies of international organisations like the WHO.

How could future work be organised – and what should be achieved?

The process of the continued development of lists of competencies for public health education will need a broadened and at the same time more firm organisational framework - if it actually shall be continued and developed in a stable manner in the future. The following suggestions may be considered:

- The establishment of a European standing committee or council on core competencies in Public Health education, with representatives from both sides: The decision makers' and employers' side - and the academic side. As population health and health systems vary across Europe, regional representation should be considered.
- The continuous development and periodical updating, by the standing committee or council, of a common catalogue of competencies in European public health education - representing the two sides and their mutual correspondence.
- The development of a European testing institution offering examination of public health students as concerns defined competencies at all academic levels – bachelor, master (graduate and postgraduate), Ph.D. - thus founding the road to European public health degrees at these levels. European Schools of Public Health – and schools in other parts of the World - will ensure the supply of relevant, high quality educational programmes.
- Workshops in European countries, at national and local levels, aiming at initiating and/or strengthening the continued communication between public health stakeholders and schools of public health. Such workshops should be coordinated with the work of the standing committee or council.
- Last but certainly not least: Continued and further developed contact in general between, on one side, European Ministries of Health, international organisations and other representatives of health systems, and, on the other side, the academic and educational systems. Communication should of course focus not only on the interaction between challenges, functions and competencies but also on the fundamental integration of scientific research. We want interventions to be effective.

This may seem a long road to the development of generally agreed lists of competencies. But in the end, lists of competencies will present a tool, which will allow for assessing the relevance of what is taught at schools of public health. On the other side, the lists will also indicate how complete the community's demand for competencies in public health professionals is. The complexity but also the potential of the underlying communication should not be underestimated. It

is clearly a collective process, which is fully dependent on the active collaboration between many persons and environments.

Anders Foldspang

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Methods in Public Health

Practical competencies – The student shall be able to:

Epidemiology

Study design – The student shall be able to:

- Describe the main types of epidemiological designs and discuss the pros and cons of these designs;
- Identify appropriate study designs to address a research question;
- Discuss and evaluate appropriate designs for specific settings;
- Discuss and develop basic designs for trans/ international data collection;
- Suggest relevant public health intervention based on evidence from empirical epidemiologic population studies and from qualitative studies.

Data collection tools and methods – The student shall be able to:

- Critically evaluate data collection tools;
- Apply data collection methods commonly used in epidemiologic research;
- Recruit participants;
- Conduct a face to face interview (quantitative and qualitative);
- Able to extract data from documents (such as medical records);
- Apply health classifications and scales commonly used in epidemiologic research;
- Define and discuss the concepts of health and disease and present the main features of frequently applied diagnostic classifications and health scales;
- Develop, validate and apply data collection forms and questionnaires for epidemiologic research;
- Select, build, apply objective and subjective measurements for health and disease as a whole and by components (physical, mental, social), at individual, family and community level;
- Select, build, apply objective and sensitive measurements to capture the differences and the similarities between physiological status and pathological status (elderliness, early childhood, maternity, convalescence, disease debut, disease evolution, impairment, etc.);
- Select, build, apply measurement of the relationship between social, family, physical environment, genetics and biological health/disease status;

- Identify and make use of register data in epidemiologic research;
- Find and apply indicators for the work situation;
- Use instruments for measuring outcomes (e.g.KAP, QOL questionnaires, SF36 etc);
- Assess outcomes against SMART criteria;
- Build criteria, criteria schemes and interpretation models in order to make a group, a population, and a community diagnosis for the past (retrospective), the present (current) and the future (prospective);
- Conduct an outbreak investigation, including creating and adjusting a case definition; describing the outbreak in terms of person, place and time; generating a hypothesis about the cause and/or risk factors of the outbreak; conducting an analytical epidemiological investigation to identify the source; recommending appropriate evidence based measures to control the outbreak; reporting and presenting results of an investigation.

Data analysis – The student shall be able to:

- Undertake a basic (descriptive) analysis of both qualitative and quantitative data and interpret the output;
- Define and compute epidemiological measures for frequency and association;
- Define, identify, describe and evaluate different types of bias in epidemiological studies.
- Perform and interpret combined analyses of published data or primary data sets from different countries.

Evaluation – The student shall be able to:

- Evaluate scientific papers on public health using epidemiological and statistical methods;
- Measure and appropriately estimate the impact on services needs of the population health assessment from different time related perspectives: cross sectional, longitudinal, prospective, retrospective;
- Define the screening concept and describe the discriminative ability of a test;
- Identify and interpret common risks and hazards in European countries based on literature and own research where applicable;
- Place own epidemiological research interests in the framework of a European research agenda;
- Develop an application for funding of scientific and/or practical documentation;
- Define and describe crucial sources of documentation concerning evaluation, including important existing population data bases, clinical data bases and system documenting data bases;

- Critical evaluate reports concerning quality assurance, quality development, and health technology assessment;
- Identify and critically and professionally assess published public health scientific literature;
- Conduct risk assessments: verify, using critical thinking, if a public health problem exists and describe its magnitude.

Surveillance and population health – The student shall be able to:

- Make use of existing health data in European countries for research and analysis;
- Compare data from European countries in terms of quality and quantity;
- Identify, retrieve and analyze documentation about population health in European countries;
- Describe (incl. graphically) and present European health data – in a language different from one's own;
- Identify new health-related challenges affecting European countries (based on epidemiological data);
- Identify, retrieve and analyze data from European surveillance systems;
- Contribute to the generation of epidemiologic information from e.g. European surveillance systems comparable across European countries and applicable by European policy makers;
- Develop data-based projections of population health and population risk profile across European countries and suggest applications of such projections in health policy making;
- Formulate European consequences of Epidemiological research, translate epidemiological information into policy setting;
- Run a surveillance system;
- Conduct surveillance data management;
- Interpret disease and public health events trends from time series analysis;
- Evaluate surveillance systems;
- Recognise the need for and set up a new surveillance system;
- Use event-based surveillance, also called epidemic intelligence, to detect health threats.

Communication – The student shall be able to:

- Communicate evidence from empirical epidemiologic population studies and from qualitative studies to a lay audience, professionals and decision makers on European, national, regional and local level;

- Undertake written and oral communications concerning population health;
- Develop written and oral presentations, reviews, summaries based on epidemiological and statistical analyses;
- Present the results of a qualitative study in the report format according to the rhetorics of qualitative paradigm;
- Write scientific articles for public health journals;
- Write scientific articles for qualitative research journals;
- Write a variety of documents such as research reports, public communications, ministerial briefings on population health.

Biostatistics – The student shall be able to:

- Estimate the necessary sample sizes in simple research designs;
- Apply basic concepts of probability;
- Calculate and interpret point estimates and confidence intervals of measures of disease frequency;
- Calculate and interpret point estimates and confidence intervals of measures of association and impact;
- Calculate and interpret significance tests;
- Select an appropriate sampling strategy;
- Define relevant statistical methods for small or large scale population based research;
- Describe and interpret the statistical uncertainty of an estimate;
- Calculate the main measures of basic epidemiological statistics (mean, standard deviation, confidence intervals; relative risk, odds ratio);
- Apply common statistical methods for inference and techniques commonly used to summarize public health data;
- Compare two estimates and assess whether the difference between the estimates is a systematic or a random difference;
- Conduct and infer from a regression analysis with one explanatory variable, based on the use of a relevant statistical computer programme;
- Discuss if an observed statistical association implies a causal relation;
- Discern between a random sample and a population and explain how a random sample can be used to describe the population characteristics;

- Discern between the different types of data and describe how systematic and random variation in data can be summarised;
- Compute measures of association adjusted for confounding by means of a stratified analysis and a simple regression analysis estimating main effects;
- Define effect modification and evaluate the statistical analysis for evidence of effect modification;
- Evaluate the generalisation (external validity) of a study result;
- Summarise a series of estimates into a common estimate and describe the precision of the common estimate;
- Interpret results and statistical data presented by statistical measures, tables and figures/graphs;
- Use a statistics software programme to perform statistical analyses.

Qualitative methods – The student shall be able to:

- Identify main types of qualitative empirical methods in literature samples.
- Assure rigors in qualitative research;
- Triangulate methods;
- Apply appropriately different purposeful sampling techniques;
- Apply multiple methods of qualitative data collection pragmatically;
- Conduct participant observation;
- Conduct in-depth interviews;
- Perform self-reflexion;
- Identify potential harm to informants caused by qualitative public health research and suggest ways to minimize harm and maximize the study's benefits;
- Deal with large amounts of qualitative data;
- Analyse textual data;
- Perform qualitative data analysis using coding techniques;
- Use software packages especially designed for the analysis of qualitative information;
- Combine qualitative and quantitative approaches if necessary;
- Discuss based on published research and current research in order to offer critique, possible applications and further directions for research.

Intellectual competencies – The student shall know and understand:

Epidemiology

Basic concepts – The student shall know and understand:

- Basic research methods used in public health;
- The notion of health and disease as a whole and by components (physical, mental, social), at individual, family and community level;
- Understand the concepts of health status of population, determinants of health and illness, factors contributing to health promotion and disease prevention;
- Basic classification theory for health phenomena;
- The differences and the similarities between physiological status and pathological status (elderliness, early childhood, maternity, convalescence, disease debut, evolution, impairment);
- The relationship between social, family, physical environment, genetics and biological health/disease status;

Study design – The student shall know and understand:

- The relationship between methodology and methods;
- Different types of study design (qualitative, quantitative and mixed methods) and analysis including their strengths and weaknesses;
- The concepts of bias and confounding, validity (internal and external) and generalisability;
- Limitations, levels of evidence;
- Deductive and inductive methods;
- Criteria for assessing quality of research.

Data collection tools and methods – The student shall know and understand:

- Understand the different methods of data collection (qualitative, quantitative and mixed methods);
- The ethics of data collection;
- Recruitment methods.
- Health scales and indices relevant for application in epidemiologic research;
- Data collection procedures commonly used in epidemiologic research;
- Published sources of epidemiologic evidence, including routine sources as well as scientific research;

- The effect of different type of data collection methods on the accuracy, validity, precision of the monitoring, investigating, evaluating;
- Quality issues concerning epidemiological data from different countries;
- Research designs applicable to European and other international health problems.

Data analysis – The student shall know and understand:

- The role of point estimation and of the population estimation and to understand the notions of statistical inference;
- Data pooling methods as applied in European countries.

Evaluation – The student shall know and understand:

- Understand the theoretical concepts of measuring outcomes including validity and reliability;
- SMART criteria and its uses;
- Existing standardised data collection instruments for measuring outcomes (e.g. KAP, QOL questionnaires, SF36, etc.).

Surveillance and population health – The student shall know and understand:

- The health and disease of groups, entire population from time related different perspectives of information gathering: cross sectional, longitudinal, prospective, and retrospective;
- The dynamic of health and disease at individual level, group or community level in interaction with preventive, curative and rehabilitation interventions (chronic, acute, episode, failure, burden, death, healing);
- Main aspects of population health development across Europe (problem focus, e.g., cardiovascular diseases, metabolic diseases, cancer, infectious diseases incl. HIV, psychiatric diseases, accidents);
- Major health data registries in Europe;
- Basic principles, methods, types and components of epidemiological surveillance and surveillance systems (organization, methodology, technology, quality, consistency, resources, availability);
- Surveillance systems in own country and in the EU and in the WHO;
- Risk factors influencing the health of population in Europe, e.g. obesity, tobacco smoking, alcohol consumption, IVDU, HIV, pollution, social factors/inequality;
- Main European research programs with focus on population health research;

- Applications of epidemiological information in an international context;
- Basic sources of funding for scientific and practical epidemiologic documentation in Europe;
- Main features of the historical, the present and the estimated future population health development;
- Major global public health problems to apply those to health problems of migrants or to work outside of Europe;
- Changes in population in Europe over time e.g. demographic changes and migration;
- Major global health problems to apply those to health problems of migrants or to work outside of Europe;
- Laws on surveillance and reporting of communicable diseases at national and European level and globally (International Health Regulations);
- Transmission dynamics of infectious diseases.

Biostatistics – The student shall know and understand:

- Confounding and how to adjust for confounding in the study design and in the statistical analysis;
- Effect modification and how to evaluate the statistical analysis for evidence of effect modification;
- The concepts of statistical power and sampling;
- The role of point estimation and of the population estimation and to understand the notions of statistical inference;
- The technical ways of computing the point estimation, the population estimation, to interpret the statistical inference;
- Methods of random sampling and principles of sample calculation;
- Concepts of statistical distributions (norm and normal distribution), measures of central tendency (mean, median mode), measures of variability (standard deviation, confidence intervals) statistical difference;
- Methods of establishing relation between variables, e.g. chi-square test, correlation, regression;
- The main measures of associations between exposures and outcomes (relative risk, odds ratio);
- Methods of projection and forecasting with special reference to population risk development and population health development across European countries.

Qualitative methods – The student shall know and understand:

- The main ways of thinking and concepts of qualitative methods frequently applied in public health as concerns population groups as well as organisations;
- Appropriate use of qualitative methods in public health;
- Basic qualitative concepts and terms;
- Advantages and disadvantages of multiple methods of qualitative data collection (focus groups, interviews, document analysis etc);
- Main conceptual differences between qualitative and quantitative approaches in public health research;
- The debate on quantitative and qualitative methods methodological in public health practice;
- How qualitative research can support or explain the results of epidemiological or economic studies;
- The multidisciplinary and trans-disciplinary nature of qualitative research;
- How to apply qualitative research to explain, explore, describe and interpret public health problems;
- How to make strategic and pragmatic choices of qualitative practices;
- The impact of various layers of the social context;
- How to conduct qualitative research using Grounded theory Phenomenology, Ethnography, Case study, Action research;
- The importance of informed consent and ways in which it can be dealt with in anthropological research;
- Positive and negative sides between covert and overt research;
- The participatory nature of both qualitative research and public health.

Social environment and health

Practical competencies – The student shall be able to:

- Implement basic methods of social research (quantitative and qualitative):
 - Apply the key methodological principles in the design of different types of research;
 - Design of quantitative survey samples, instruments and procedures;
 - Develop, validate and apply data collection forms and questionnaires;
 - Critically evaluate research findings;
 - Understand of the relationship between measurement, theory construction and testing, develop a critical understanding of the relationship between theory and measurement;
 - Summarize and present data using graphic methods;
- Suggest relevant public health intervention based on empirical evidence from relevant quantitative and qualitative sociologic and social epidemiologic population studies;
- Communicate evidence from empirical sociologic, anthropologic and social epidemiologic population studies, from studies in political science and qualitative studies to a lay audience, professionals and decision makers on European, national, regional and local level;
- Implement basic terminology of sociology, social epidemiology, demography, anthropology, psychology, history, cultural studies and geography to describe the impact of the social environment on health;
- Identify different levels of impact of social environment on health to perform assessments on macro-, meso- and micro-level;
- Identify core areas of the social environment and their measurement with relevance to public health and understand major research findings;
- Describe the socio-economic distribution of health within and between populations and connect it to major related research findings;
- Describe and discuss the importance of socio-economic and mental factors, culture, behaviour and environment for the population's health and for the development of health promotion and preventive programmes;
- Describe and discuss crucial components of conditions of living for the entire population as well as for selected population groups and minorities, especially children, elderly, adults in-

and outside the labour market, immigrants, underprivileged ethnic groups, prisoners, those with chronic illness, people with physical, mental and learning disabilities;

- Identify, retrieve and analyse major trends of social change with special reference to history, demography, social structure, culture, geography and economic and technological development;
- Recognise the significance of impact of social change on health and understand major related research findings;
- Recognise main pathways/mechanisms/processes by which the socio-economic environment influences health and differentiate material, psychosocial and behavioural explanations of social determinants of health and understand major related research findings:
 - Material: poverty, income inequality, neighbourhood deprivation;
 - Psychosocial: social stressors and protective factors; e.g. social network, social cohesion, social anomie, social support, models of psychosocial stress (e.g. demand-control, effort-reward imbalance, unfairness);
 - Behavioural explanations: healthy lifestyle, sociological and psychological models of behavioural change;
 - Combined strategy to investigate the influence of social determinants (direct and indirect effects) on health outcomes;
 - Statistical tools for path analysis:
 - E.g. tools to analyse such an approach include path analysis,
 - Structural equation models (SEM)
- Use current health and social indicators in administrative data to assess the impact of social determinants on health;
- Work with routinely available data to explain socio-environmental influences on health;
- Identify population groups with elevated health risks within health monitoring systems and recognise their health needs;
- Recognise areas of socio-environmental influences on health where available information is insufficient and needs further development.

Intellectual competencies – The student shall know and understand:

- Basic philosophy and concepts of the social sciences, i.e. the following sociological concepts, hypotheses and definitions concerning the relations between social phenomena:
 - Individual and society;

- Concept of the social environment;
- Social structure, social processes;
- Social group;
- Socioeconomic status, socioeconomic position;
- Social inequalities.
- Basic terminology of scientific disciplines that analyse the impact of the social environment on health (e.g. sociology, social epidemiology, demography, social psychology, history, cultural studies and geography):
 - Socioeconomic position, social status, social mobility (inter- intra-generational);
 - Material deprivation, relative deprivation;
 - Life course epidemiology, latency model, pathways model, accumulation model;
 - Prospective, observational studies (birth cohort study);
 - Incidence and prevalence of diseases, morbidity and mortality;
 - Socialization, learning, social norms and values;
 - Health-related lifestyle (health adverse behaviour);
 - Personality factors (i.e., locus of control, self-efficacy, resiliency, etc.);
- Basic methods of social research (quantitative and qualitative):
 - Principles of research design in social studies;
 - Methods of data collection:
 - Collection of primary data: self-administrated questionnaires, structured standardised interviews (CAPI, CATI), non-standardised open interviews; focus groups; observational techniques';
 - Collection of secondary data: available data from epidemiological studies to be accessed for secondary data analysis, administrative data (pros and contras);
 - Range, value and utility as sources of data for sociological research.
 - Methods of data analysis:
 - Descriptive statistics;
 - Basic ideas of sampling and statistical inference;
 - The measurement of association and correlation and tests of significance;
 - Multivariate techniques;
 - Effect modification, mediation, moderation, structural equation models (SEM).
 - Survey research methods:
 - Scientific methods, quantification and standardisation as applied to survey research;
 - Design of quantitative survey samples;

- Instruments and procedures;
- Sources of survey.
- Different levels of impact of social environment on health (macro-, meso-, micro-level of analysis);
 - Macro-level: social-economic/socio-ecological environment, e.g. neighbourhood deprivation, traffic load, air pollution, social capital;
 - Meso-level: housing and living circumstances, working conditions, social network, social support;
 - Micro-level: structure and quality of close social relationships in primary groups, work within couples, role conflicts within couples, quality of exchange in terms of reciprocity, trust.
- Core areas of the social environment with relevance to health (e.g. neighbourhood, housing, work and employment);
- Actual social conditions of living of the population (European, national, regional, local, including selected population groups: households and families, urban and rural population, aboriginal population, immigrant population, metropolitan influenced zones (MIZ), lone-parent families, visible minority population):
 - Indicators of social condition of living: income, standard of living, consumption patterns, housing, transport, leisure, media and culture, social security, social and political participation and integration, public safety and crime, education and vocational training, total life situation, labour market and working conditions;
 - Neighbourhood characteristics: safety, crime, education, poverty, lone parent households, unemployment rate.
 - Community's social capital: social trust, social support, social cohesion, participation, social isolation.
- Actual health behaviour of the population (European, national, regional, local);
 - Health behaviour: exercise activity, dietary behaviour, alcohol and drug abuse, cigarette smoking...
 - Health-related behaviour of specific subgroups, e.g. adolescent risk behaviour.
- Main components of conditions of living for the entire population and for selected population segments, especially children, elderly people, adult persons in- and outside the labour market, immigrants;
 - Neighbourhood characteristics: safety, crime, education, poverty, lone parent households, unemployment rate, other;

- Community's social capital: social trust, social support, social cohesion, participation, social isolation ;
- Social distribution of health within and between populations (with special emphasis on socio-economic status, age, gender and culture, on individual and aggregate level);
- Major trends in historical, social and cultural change with relevance to health, with special reference to demography (demographic and epidemiologic transition), social structure (mobility, migration) and economic and technological development (e.g. globalisation);
 - Challenges of the impact of European integration and globalization:
 - Free movement of persons (workforce- and patient mobility), services and goods of the internal market, through the competition rules and (pharmaceutical) industrial policy;
 - Possible positive social implications (solidarity, equity, accessibility and quality of care);
 - Changes and health care systems (the competition rules);
 - Changes in labour markets: the rise in non-traditional work arrangements (increases in the proportion of the labour force employed part-time, in shift work, self-employed, and in the proportion of workers holding multiple jobs and casual/temporary jobs).
 - Extended life expectancy, growing elderly population:
 - Demographic and social policy aspects of population ageing, social security;
 - Technological development:
 - Improvements of medical care;
 - Extending the capacities of health worker;
 - New EU policies.
- Impact of social change on health (at different levels (e.g. globalisation vs. urban development) and in core areas (e.g. family, work)), with special reference to:
 - Demographic and epidemiological transition;
 - psychosocial stress;
 - lifestyle changes;
 - material deprivation.
- Main pathways, mechanisms, processes linking the social environment to health (cultural, material, psychosocial, behavioural);
- Explanation of social determinants of health with emphasis on material pathways (e.g. poverty, income inequality, neighbourhood deprivation);

- Explanation of social determinants of health with emphasis on psychosocial pathways (social stressors and protective factors; e.g. social network, social cohesion, social anomie, social support, models of psychosocial stress (e.g. demand-control, effort-reward imbalance, unfairness);
- Explanation of social determinants of health with emphasis on behaviour pathways (healthy lifestyle, sociological and psychological models of behavioural change):
 - Models of health behaviour;
 - Relationships between social structure, culture, health policy, political processes, economics and health behaviour;
 - Community dynamics and principles of community development;
- Explanation of social determinants of health with emphasis on cultural pathways (e.g. traditions, values, beliefs);
- Conceptual and methodological bases of assessing and monitoring social environment with relevance to health, including their ethical implications;
- Importance of collecting primary data to generate new knowledge with relevance to social determinants of health and of applying this knowledge in scientific research and in systems for routine surveillance and monitoring;
- Indicators of health status and of social environment in administrative data (cover a wide range of data sources, e.g. morbidity, income etc., at different levels: European, national, regional, local):
 - Social indicators: level of education, adult and youth unemployment rate, long-term unemployment rate, low income rate, children in low income families, average personal income, median share of income, safety, crime;
 - Health behavior;
 - Well-being;
 - Health conditions;
 - Functioning: disability days, participation and activity limitation, disability-free life expectancy (DFLE), disability-adjusted life expectancy (DALE);
 - Mortality: Infant mortality, perinatal mortality, life expectancy, mortality by selected causes, potential years of life lost (PYLL).
- Sources of information (national and European data sources, surveillance/monitoring systems, e.g national surveys, European Health For All Database – WHO/Europe, EUROSTAT));
- Definition of population groups with elevated health risks within health monitoring systems;

- Strengths and weaknesses of administrative data as the basis of health monitoring systems (usefulness, reliability, comparability and validity).

Physical, Chemical and Biological Environment and Health

Practical competencies

Health risk assessment – The student shall be able to:

- Perform assessments of the health impacts of environmental contamination (risk assessment);
- Assess combined exposures and their health effects;
- Develop a testable model of environmental insult;
- Detect and forecast developing risks from new technologies;
- Estimate the magnitude of the burden of occupational diseases, injuries and fatalities;
- Apply the principles of exposure assessment and knowledge about the most common biological, physical, chemical and psychological factors affecting health;
- Perform assessment/estimation of the environmental burden of occupational diseases, injuries and fatalities;
- Plan, perform and analyse studies in the field of environmental epidemiology; to be able to conduct spatial cluster analyses;
- Make health impact assessment of measures including implementation of legislation;
- Assess the burden of disease that is attributable to environmental hazards among European children;
- Study inequalities in environmental exposures across European countries.
- Empirically study social inequalities in environmental exposures across different countries in Europe;
- Identify priority issues/areas in the major topics in “environment and health” where more information and research are needed;
- Design risk assessment studies to address the multi-causality of the disease and the complexity of interactions between environment and health;
- Identify and quantify exposure to contaminants, translate exposure into health impact, trace exposure to the sources of contamination;
- Identify priority issues/areas in the major topics in ‘environment and health’ where more information and research is needed;
- Analyse results of European research relevant to Health and Environment priority areas;
- Analyse European data and epidemiological trends in environmental and occupational health;
- Assess the fraction of the European disease burden attributable to an environmental risk factor;

- Compare environmental data from European countries, based on varying measurement, scaling, retrieving and communication techniques;
- Evaluate whether the existing monitoring and reporting systems are sufficient to assess exposures to environmental contaminants, their health impacts and effectiveness to policy measures;
- Recognise priorities at European, national and local levels for decision making on policies, practices and research for occupational health;
- Perform assessment of the health impacts of environmental contamination and of the costs and effects of policy measures;
- Plan and implement research programs capable of identifying emerging risks and define causal links between environment and health;
- Evaluate whether the existing monitoring and reporting systems in Europe are sufficient to assess exposures to environmental contaminants, their health impacts and effectiveness of policy measures;
- Perform assessments of the cost effectiveness and benefits of policy measures (e.g. prevention programmes) in environmental health;
- Plan and implement research programmes capable to identify emerging risks and define casual links between environment and health of water protection.

Health risk management – The student shall be able to:

- Monitor and interpret environmental exposures;
- Suggest relevant public health intervention based on evidence from empirical environmental studies;
- Apply the principles of exposure assessment as an important part of the basis for the development of health risk management programmes;
- Apply basic environmental health concept in practice with examples of team work with other sectors at local or Governmental level;
- Plan and implement European regional strategies on occupational health;
- Implement European policies and regulations in the field of housing, urban planning and management;
- Design and organize evidence based health inspection systems;
- Provide evidence based environmental and occupational health inspection;
- Use the new information systems and linkage of exposure data bases with health databases;
- Identify specific problems in public health sciences in the total environment;

- Teach and lead a team of specialist in specific fields in environmental health (including occupational health);
- Develop skills in team work in exposures assessment and interpretation of results;

Health risk communication – The student shall be able to:

- Communicate evidence from empirical environmental studies to a lay audience, professionals and decision makers on European, national, regional and local level;
- Communicate risk in relation to gene – environment interactions;
- Give advocacy in structural interventions for preventive measures;
- Communicate and cooperate with NGOs including trade unions;
- Communicate and cooperate with mass media.

Intellectual competencies – The student shall know and understand

Health risk assessment

Methodology – The student shall know and understand:

- Principles of exposure assessment to major environmental contamination, current methods and tools;
- Principles of major health impact assessment, current methods and tools;
- The specific design of epidemiologic studies in environmental health;
- Current environmental and occupational risk assessment and health impact assessment: concepts and methods;
- Environmental and eco-epidemiological health concept, i.e. dose-response relationship;
- Basic limitations of toxicology and of assessment measures for environmental pollutions, and how they affect assessment outcomes;
- General mechanisms of toxicity in eliciting a toxic response to various environmental exposures;
- Principles of application of basic methodological approach, examples and training of environmental health risks;
- The best possible assessment of exposure to environmental contamination and of the corresponding health risks on the basis of existing information;
- Assessment of social inequalities of environmental exposures;
- Identification of subgroups (children, elderly, disadvantaged people), who are in particular vulnerable to toxic substances;

- Environmental economy;
- How to evaluate new research (scientific) results.

Facts – The student shall know and understand:

- The significant elements of the history of environmental and occupational sciences and incidents;
- The direct and indirect human, ecological and safety effects of major environmental and occupational agents;
- The most common health outcomes related to environmental factors;
- Exposure and health impact of soil pollution, sewage, sewage disposal and recycling;
- Genetic, physiologic and psychosocial factors that affect susceptibility to adverse health outcomes following exposure to environmental hazards;
- Gene and environment interactions;
- Combined health effects of physical, chemical, biological and psychosocial factors;
- Main environmental exposures and their effects on health (e.g. indoor and outdoor air pollution, noise, carcinogens, neurotoxins, electromagnetic fields, radioactivity, unsafe housing, urban planning);
- Indoor and outdoor air pollution and health (e.g., lung cancer, respiratory diseases, asthma and allergies); chronic chemical exposure and health;
- Environmental causes of disease in Europe, how they are categorized (e.g. media which may carry hazard, individual risk factors, according to the nature of the hazard, occupational health risks, non-occupational health risks), and their indicators;
- Ecological status of Europe's water (quality and quantity);
- Direct and indirect human, ecological and safety effects of major environmental and occupational agents;
- The scale and the trends of current health problems associated with major environmental contamination in Europe;
- Effects of environmental exposures on health depending on the social settings and behaviours of individuals and communities;
- Impact on health from poor or inadequate social and living conditions, hygiene in housing, immediate environment of dwellings, housing policies, urban planning and management;
- Impact on health of poor and disadvantaged groups (e.g. disadvantaged children) derived from poor or inadequate social and living conditions;
- Psychosocial exposures and their health effects.

Health risk management

Methodology – The student shall know and understand:

- Principles of environmental and occupational risk management;
- How risk management best is practised based on risk assessment;
- Major approaches for preventing and controlling environmental hazards that pose risks to human health and safety;
- How water is monitored, assessed and managed in Europe and the major significant shortfalls and gaps in the European countries monitoring, assessment and management systems of the water status;
- Various risk management and risk communication approaches in relation to issues of environmental justice and equity;
- How to identify potential stakeholders.

Facts – The student shall know and understand:

- What reduction in health impact can be expected from the policy measures, which are possible in environmental health;
- Occupational health standards and healthy work practices based on scientific risk assessment;
- International reference (WHO, UNEP, UNDP...) and state national regulatory programs, guidelines and authorities that control environmental health issues;
- European referent policy measures, interventions and initiatives in the field of Environment and Health, i.e. precautionary Principle;
- European and national policies for health at work;
- Occupational health standards and healthy work practices based on scientific risk assessment;
- European policies and regulations in the field of housing and the built environment;
- Institutions and persons responsible for national and international environmental and occupational risk management;
- Health systems on EU and national level which handle physical, chemical, biological factors and their health effects;
- National and international warning systems and databases on environmental-related exposures and health risks.

Health risk communication

Methodology – The student shall know and understand:

- Risk communication concept;
- How to identify potential target groups and persons for communication;
- Various risk communication approaches in relation to issues of environmental justice and equity.

Facts – The student shall know and understand:

- The inter-sectoral communication in application of environmental health principle.

Health Policy, organisation, management and economics

Practical competencies – The student shall be able to:

Application of theories and models – The student shall be able to:

- Apply the knowledge of the most recent views (on paradigms and theories) on health (care) economics to actual developments in health care;
- Relate theories, models and knowledge on health economics, policy, law and ethics to one another;
- Apply empirical and normative theories for the analysis of new problems and the development of well-designed policy programs to tackle these problems;
- Evaluate the strengths and weaknesses of theories and policy programs from various disciplinary perspectives;
- Formulate an assessment that also takes relevant aspects of the wider context into account;
- Understand a 'political' context and develop an effective working in it (at all levels).
- Apply the theories of logistics and operations management to real-life situations in health care systems;
- Participate in the development and implementation of guidelines in the health care sector, e.g. with respect to COPD, diabetes mellitus, other;
- Translate a problem into a research and documentation question;
- Suggest relevant public health intervention based on evidence from empirical studies in disease prevention and health promotion;
- Select and apply appropriate, ethical and feasible study designs to answer questions in health services and health systems research;
- Apply the acquired knowledge on health systems, logistics and operations management on practical situations of change;
- Interpret and apply health economic(s) research methods and techniques;
- Apply IOM's Chain of Effects Model;
- Analyse actual cases from an economic and a health economic point of view;
- Gather information on health economics;
- Design systems for logistics and operations management;
- Apply the change agent's work: analysis of the problem (diagnosis), picturing the desired new situation (design) and developing change measures to introduce change (implementation);
- Link scientific and practical knowledge to other theories and problems being discussed in other units of the education;

- Search for optimal solutions in complex and difficult situations requiring change;
- Apply theoretical knowledge from the field of the financial management to practical management problems in the health care sector;
- Perform a theoretical analysis of complex management problems and the process of managerial decision-making in case of uncertainty;
- Search for optimal solutions in situations characterized with limited information and/or conflicting interests of individuals and parties;
- Apply economic theory to real-world problems in health care and to provide useful information for policy making;
- Interpret health economic indices;
- Apply managerial instruments and methods.
- Analyse the principles, structure and functions of health systems, including their financial, organisational and policy-making processes and systems;
- Assess independently new developments in the field of logistics and operations management;
- Critically assess and apply a range of key management concepts and functions in a range of health care settings;
- Appreciate the role and contribution of economic theory, organisational theory and approaches to management in the field of health care;
- Analyse the relationship between research evidence and policy/practice;
- Analyse determinants of demand, supply and costs of production;
- Apply the concepts of efficiency, equity, elasticity, marginal analysis and opportunity cost;
- Perform simple cost analyses and health economic evaluations (cost effectiveness analysis, cost benefit analysis, cost utility analysis).
- Critically examine responses to challenges to health services in different countries;
- Analyse key, persistent and widespread problems in providing health services and suggest approaches to resolving these problems;
- Identify the key steps involved in evaluating specific health care interventions;
- Define an organisation and management, and list the principal levels of analysis in organisational studies;
- Apply one or more of models available to help managers investigate organisational issues, approaches and tools in a case study based on an organisational problem derived from their own experience;
- Apply their knowledge and skills in an integrated fashion to the critical analysis of a specific health service scenario;

- Describe, implement and evaluate the specific contributions of a range of scientific approaches and fields of study to different aspects of the management of health services;
- Perform program planning, implementation and evaluation;
- Apply basic principles of and designs for public health programme evaluation, especially primary, secondary and tertiary prevention, including effect evaluation and process evaluation; health economic evaluation; organisational evaluation; health technology assessment; comprehensive strategies;
- React quickly to change.
- Measure health outcomes to guide decision making in prevention and health promotion strategy;
- Use epidemiological, sociological, economical and other findings to plan public health programmes;
- Implement public health programmes: translate policy into public health practice;
- Use evaluation results of programme progress towards objectives and outcomes in further programme planning and modification;
- Identify an appropriate public health intervention based on surveillance data;
- Plan, prioritise and schedule tasks in a project;
- Monitor progress and quality against specific targets, adjust schedules and make changes if necessary;
- Manage available resources (staff, time, budget, etc) effectively;
- Conduct activities within the financial and operational planning context;
- Prepare an activity report;
- Properly evaluate the magnitude of a problem and propose ways to reduce/manage this dimension;
- Plan interventions after a proper evaluation.

Monitoring and evaluation – The student shall be able to:

- Develop a surveillance system;
- Develop a monitoring system;
- Apply documentation from surveillance and monitoring in the management process;
- Adequately evaluate the quality of prevention, health promotion, rehabilitation and care.

Communication and collaboration – The student shall be able to:

- Communicate evidence from empirical studies on disease prevention and health promotion to a lay audience, professionals and decision makers on European, national, regional and local level;
- Communicate effectively on issues in logistics and operations management in health care;
- Clearly explain complex issues regarding change and change processes;
- Present arguments and advices with regards to management problems;
- Work autonomously or in a team on health policy problems and problems in health policymaking;
- Discuss and form his/her opinions on health economics;
- Form opinions on (actual) problems and themes on the basis of economic arguments
- Convince, explain and preempt;
- Be able to make dialog with all sectors;
- Assist others to clarify thinking, create consensus, and develop ideas into actionable plans;
- Write a scientific paper on health policy or health policymaking programs;
- Write effective health policy reports for their superior;
- Acquire the skills required for working autonomously or in a team on health policy problems and problems in health policymaking;
- Prepare written reports and oral presentations regarding management problems in a concise and clear manner;
- Apply knowledge of effective team-working and communication skills to solve problems and achieve specific goals;
- Recognize what skills are needed and where to find it;
- Build collaboration with individuals and organizations;
- Develop community partnerships to support epidemiological, sociological, environmental and other investigations;
- Be an effective team member, adopting the role needed to contribute constructively to the accomplishment of tasks by the group (including leadership);
- Promote collaborations, partnerships and team building to accomplish epidemiology programme objectives;
- Mentor peers or junior public health professionals;
- Mutually identify those interests that are shared, opposed or different with the other party to achieve good collaborations and conflict management.

Management - The student shall be able to:

- Manage resources, budgetary planning, writing grant applications.

Intellectual competencies – The student shall know and understand:

Theories and models – The student shall know and understand:

- Main aspects the development of European health policy and social policy since 1850, especially as concerns the development of different types of social security systems, including that of the welfare state;
- Main developments in the health services and social services of European countries since 1850, including health care reforms;
- Main components, structure, organisation and functioning of the health services and social services of European countries;
- Basic principles which are relevant to the effective management of organisations;
- Key theories that underpin effective management, including theories relating to motivation;
- How the disciplines of epidemiology, history, medicine, sociology and economics each contribute unique insights to understanding how a health service functions;
- The history of public health and public health structures and infrastructures;
- Basic principles of a strategic process, including:
 - Population health problem recognition; identification of available resources and organizations;
 - Target setting;
 - Choice of intervention;
 - Planning, decision making and implementation;
 - Follow-up and evaluation; renewed decision process;
 - and including:
 - Tools for routine documentation (surveillance and monitoring);
 - Decision processes in the strategic process ;
- Public health management: basic problems and methods;
- The concepts of organisation, decision making process, behaviour within organisations;
- Legal public health policy documents at local, national and European level;
- Legal and political environment;
- The concepts of quality and professionalism from the perspectives of health law and health care ethics and policy;

- The framework of rules and regulations (legislation, regulations, self regulation) that apply to the provision of reliable care and the tasks and responsibilities of the various relevant public and private parties in the health care sector;
- Major basic principles of ethics;
- Define and discuss the concepts quality assurance, quality development, and health technology assessment;
- Leadership styles, organizational theories;
- Organization of the public health & health care systems;
- Basics of public health & health care management;
- Foundations of health policy and health economy;
- Empirical and normative theories in the field of health economics, health law, health ethics, health quality, political science, organisational change, operations and financial management for the analysis of health policy problems and problems of health policymaking;
- The most recent views on (paradigms and theories on) health economics;
- Different health economic(s) techniques and research methods;
- The economic approach of health;
- The economic approach of health care and principles of economic evaluation as applied to health care;
- The theory and practice of quality organisation and quality policies in the health care sector including aspects as systems approach, scientific method (measurement), team approach and also aspects like inspection and enforcement;
- The specific policy aspects of care quality organisation, including logistics and safety policies;
- The evaluation of the effectiveness of care and care provision, both for the purpose of policymaking and for the actual delivery of reliable health care (quality evaluation);
- The theories of logistics and operations management
- Recent developments in the field of logistics and operations management
- Impact of the structure of health care systems upon the applicability of different theories of logistics and operations management;
- Different views on change and change processes, including the relevant models;
- Change principles and mechanisms;
- The role of leadership as driving force of change, including strategies of change;
- The principles of the learning organisation;
- The theory of financial management, particularly in the area related to the processes of financial planning and control within health care organizations;

- Basic methods and models that are applied in the financial management field, especially with regards to investment decisions in health care organizations;
- The relationship between financial management and other management fields concerning the processes of planning and control within the health care organizations;
- Basic analysis of health policies;
- Key characteristics in the organisation and functioning of health and social services
- The basic elements of the economic analysis of health care;
- The basics of economic evaluation;
- Managerial processes and management issues in health care;
- Organisational theories underpinning the analysis of managerial processes;
- Identify, assess and synthesise evidence from research literature;
- The basic market model, market failure and the roles and limitations of markets (and governments) in the finance and organisation of health care;
- Basic functions of health services and outline the reasons why services have developed in the way they have;
- The inputs, processes and outcomes of health services;
- Main methods used for evaluating the effectiveness, efficiency, equity and humanity of health care and the main advantages and limitations of each method;
- Risk management methods in public health organization;
- Quality and resources – choice of different strategies.

Health Promotion and Disease Prevention

Practical competencies – The student shall be able to:

Health determinants, risk factors – The student shall be able to:

- Describe the main challenges for public health, and critically assess the relation between these challenges and principles and models of disease prevention and health promotion;
- Describe and identify target groups in terms of their health and their cultural and socio-economic features and contexts, and appreciate a wide range of views and values and their contribution to the overall 'health picture';
- Describe and identify major population health risks amenable by health promotion and disease prevention, especially in relation to:
 - Alcohol abuse;
 - Smoking;
 - Lack of physical exercise;
 - Poor diet;
 - Risky traffic behaviour and risky behaviour at the workplace and in the home;
 - Other;
- Describe and identify biological, physical, chemical, social and social-psychological principles and elements involved in prevention and health promotion:
 - Primary prevention, including environmental and behaviour modification programmes (nutrition; physical exercise) and biomedical interventions (e.g., vaccination programmes, programmes for the prevention of cardiovascular diseases);
 - Secondary prevention (screening);
 - Tertiary prevention, including rehabilitation and other interventions in social medicine;
 - Preventive and health promotion programmes with specific target groups, including the school health services, the child and adolescent dental services, the health and social care services for the elderly, services for mentally disabled;
- Carry out a lifestyle (tobacco, physical exercise, diet, alcohol, accident prone behaviour, etc.) survey in a population;
- Devise and set up a health surveillance system including lifestyle (tobacco, alcohol, physical exercise, diet, accident prone behaviour, other) and disease, including:
 - The resident population as a whole;
 - Defined risk groups or target groups for intervention, e.g., children, elderly, handicapped, socially disadvantaged, other;

- Analyse the scale of the lifestyle components (tobacco, physical exercise, diet, alcohol, accident prone behaviour, other) of the epidemiology of common diseases in a population;
- Identify the barriers to healthy lifestyle (smoking cessation, physical exercise, diet, alcohol, accident preventing, other) in a community;
- Plan a surveillance system to monitor the nutritional health of schoolchildren;
- Monitor nutrition status with anthropometric, hematologic, biochemical measures for macro and micronutrient deficiency conditions among vulnerable groups.

Theories and principles of health promotion and prevention – The student shall be able to:

- Define, identify, discuss and evaluate basic concepts and types of prevention and health promotion;
- Illustrate the general contributions of:
 - The social sciences and
 - The biomedical sciences- to the theory and practice of:
 - Health promotion;
 - Disease prevention.
- Explain the development of social psychological theories, from individual, intra-personal theories (e.g., the Health Belief Model) to inter-personal theories (e.g., Bandura's Social Learning Theory) and system based theories (e.g., Ford's Theory of Motivation).

Strategy making, programme development, management and evaluation

– The student shall be able to:

- Describe the history and evolution of health promotion, including the relationships between health education, health promotion and the new public health;
- Identify and assess critically basic and general principles of strategy making and concrete strategies implemented in prevention and health promotion;
- Apply and discuss relevant health educational theories in the context of concrete health promotion challenges;
- Analyse health education in texts based on empirical studies;
- Describe and discuss health and health promotion programmes in own country;
- Identify the range of factors influencing public health policy in own country;
- Know and identify the role of the arena/setting – local community, school, workplace, consumer interfaces in the health and social services – for health education, like in the theories of diffusion and social change;

- Define and describe the planning of health education in the context of the models, like the Precede-Proceed Model;
- Identify barriers for the implementation of health education in individuals and population groups, based on theories of diffusion and social change.
- Develop and conduct a project for public health programme evaluation, especially primary, secondary and tertiary prevention, including effect evaluation and process evaluation; health economic evaluation; organisational evaluation; health technology assessment; comprehensive strategies;
- Plan, implement and evaluate health promotion programmes and activities;
- Plan, implement and evaluate disease prevention activities:
 - Primary prevention (e.g., smoking cessation; hip fracture prevention in the elderly);
 - Secondary prevention (screening);
 - Tertiary prevention (e.g., rehabilitation; management of heart failure; malnutrition in cancer patients; arthrosis in obese persons);
- Promote the health of populations by influencing lifestyle and socio-economic, physical and cultural environment through methods of all the elements of health promotion, health protection, and disease prevention, as applied to populations, communities and individuals;
- Devise a healthy policies for populations, e.g., “food and health” policy for a population;
- Work with local communities on how to improve the access to healthy lifestyle (smoking cessation, physical exercise, healthy diet, accident preventing, other);
- Assess critically the evidence relating to the effectiveness of health and healthcare interventions, programmes and services, and apply this to practice as to improve services and interventions through audit and evaluation;
- Review critically the main Public Health and Health Promotion trends in their local and national context and in a wider European and global perspective;
- Design a multinational/multisectoral health promotion project, integrating different approaches;
- Build collaboration with individuals, groups and organizations, demonstrating communication with individuals, groups and organizations;
- Implement strategies to put the policies into effect and assess the impact of policies on health;
- Select appropriate staff and project colleagues;
- Lead teams and individuals, build alliances, develop capacity and capability, work in partnership with other practitioners and agencies and use the media effectively to improve health and wellbeing;
- Participate in an intersectoral and international work environment;

- Work with governmental agencies, private industry, and all other other public health stakeholders;
- Identify health promotion measures for selected health problems effective on the regional/European level;
- Define indicators for monitoring health promotion projects that are comparable on the local, regional, national and European level;
- Take into account cultural differences within Europe for project planning, management and communication;
- Identify effective approaches for selected health problems at regional and/or European levels;
- Identify effective health promotion strategies for reducing health inequalities in Europe;
- Identify appropriate health promotion measures, in line with EU-policies, for specific problems (tobacco, nutrition, drugs, alcohol abuse, injuries, etc.) for use at local and regional levels;
- Identify health topics referred to in EU strategies and in the WHO strategy for Europe;
- Promote shared ownership of health problems and their solutions with stakeholders and the public in general.

Communication – The student shall be able to:

- Demonstrate excellent communication skills in relation to e.g. politicians, decision makers, board of health, academics, commercial organizations, NGOs, the media, community groups, the general population;
- Communicate evidence from empirical studies on disease prevention and health promotion to lay audiences, professionals and decision makers at European, national and regional level;
- Indicate relevant public health intervention based on evidence from empirical studies on disease prevention and health promotion;
- Effectively use the media to improve health and wellbeing;
- Advise governments on cross-cutting aspects of health policy, e.g., agricultural policy likely to promote healthy nutrition, or traffic policy to prevent traffic accidents;
- Recommend public health interventions, such as:
 - Physical exercise programmes targeting selected groups, e.g., children, handicapped, elderly;
 - Smoking cessation programmes;
 - Healthy diet programmes, including food fortification policies and vitamin and mineral supplementation for groups at risk, e.g. infants, children, women, middle aged and older adults for prevention of micronutrient deficiencies including anaemia, vitamin D deficiency and osteoporosis;

- Communicate by appropriate use of media to the population about health services;
- Communicate information about traditional medicine and alternative therapies.

Intellectual competencies – The student shall know and understand:

Health determinants, risk factors – The student shall know and understand:

- The influence of positive and negative risk factors in the onset and development of disease;
- General mechanisms and principles underlying poor health, e.g.:
 - The impact of smoking and alcohol consumption on health;
 - The impact of physical inactivity on health;
 - The impact of diet on health - malnutrition, obesity, cardiovascular disease, cancer, etc.;
- The epidemiology of common disorders associated with lifestyle factors, in resident populations and in specific vulnerable groups;
- Social determinants of health, such as the effects of social cohesion on health outcomes;
- An understanding of social marketing;
- Changing patterns of determinants of health, including physical, environmental, social, biological and psychological factors;
- Models of health;
- Priority action areas for health promotion and disease prevention in the health strategy and public health programme of the EU;
- The influence of industry and agriculture upon:
 - Tobacco smoking;
 - Physical inactivity;
 - The nutritional environment;
- Knowledge and sensitivity to gender issues, and to ethnic factors, age, and other health markers;
- Broader epidemiological changes in patterns of health and disease in Europe and in the rest of the world in recent times;

Theories and principles of health promotion and prevention

– The student shall know and understand:

- History of Health Education/ Health Promotion in different countries;
- Concepts of empowerment, participation, social capital, capacity building, etc.;
- The concept of Salutogenesis;
- Cultural competencies in health promotion;

- How policy is formed, structured and how to influence it, including by use of health advocacy;
- Methodology of designing health plans;
- Applications of health promotion assessment and change theories and models such as the „Stages of Change Model“, the „Social Learning Theory“, the „Theory of Planned Behavior“, „Diffusion of Innovations-Theory“, the „Health Belief Model“, etc.;
- Applications of planning models such as the PRECEDE-PROCEED-model, the Public Health Action Cycle, Social Marketing, etc.;
- The importance of the setting in which health promotion takes place, and the application of the settings approach in, for example:
 - Health and social services settings;
 - Educational settings;
 - Work place including unemployment;
 - Recreation (art, sport, etc.);
 - Transport settings;
 - Spatial environment;
 - Arena for health promotion work, e.g. health advocates and advisers;
- The basic principles of primary, secondary (screening) and tertiary prevention;
- The PH professional should know the basic features of infection disease control, including vaccination;
- The basic principles underlying tertiary prevention, and of the potential benefits of rehabilitation of various forms to improve the health of individuals (Tertiary prevention);
- The basic principles of and designs for public health programme evaluation, especially primary, secondary and tertiary prevention, including effect evaluation and process evaluation; health economic evaluation; organisational evaluation; health technology assessment; comprehensive strategies;
- Outcome and process evaluation;
- International practices and standards for public health monitoring and intervention.

Strategy making, programme development, management and evaluation

– The student shall know and understand:

- Evidence-based health promotion;
- Quality standards;
- Principles and practice of decision making at relevant levels – local, regional, national, European;

- The evidence of health promotion and disease prevention effectiveness across European countries;
- The principles that need to be satisfied before a screening programme can be established (Secondary prevention);
- National and European policy and legislation relating to lifestyle and health risks, including tobacco smoking, alcohol consumption, labelling of food products, drugs, workplace safety, etc.;
- Conflict resolution, social marketing, techniques of community development;
- The Settings Approach and its national and international networks;
- The benefits and means of community development, including the roles and cultures of partner organisations such as local authorities;
- The role of strategic partnerships and the added value of organisations working together;
- The role of target setting, e.g. public service agreements, local authority agreements.

Communication – The student shall know and understand:

- Basic principles and theories of communication.

Cross-disciplinary Themes, Including Strategy Making, Ethics, Other Themes

Practical competencies – The student shall be able to:

Strategy making – The student shall be able to:

- Suggest relevant public health interventions based on evidence from empirical studies on public health strategies;
- Describe, define and identify the logical structure of the fundamental steps of progression of a strategy;
- Point out important disciplines and parameters involved in the individual steps of progression of a public health strategy;
- Apply principles of progression, cross-disciplinarity and integrated disciplinarity in a public health basic strategy, by use of the principle of individual disciplines and the mutual interaction;
- Prepare and write a strategic framework-action plan for a public health problem solution.
- Describe and discuss the main contents of:
 - WHO's public health strategies Health for All 2000 and Health 21;
 - The population health strategies of selected European countries;
- Describe how strategy development should be initiated;
- Make judgments on mechanisms for assuring the strategy implementation;
- Identify, retrieve and prepare a list or set of indicators and a plan for monitoring and evaluation of a strategy;
- Acquire and critically assess relevant systematic documentation for the evaluation of programmes and strategies;
- Identify unmet needs for systematic documentation of and in strategies;
- Perform a critical assessment of a public health strategy;
- Work in teams on a strategy for a specific public health topic;
- Relate a strategy to future development;
- Conduct an evaluation of the external environment (community appraisal);
- Perform a comparative analysis of public health strategies developed or implemented;
- Develop and discuss a budget plan for a strategy.

Communication – The student shall be able to:

- Communicate evidence from empirical studies on public health strategies to lay audiences, professionals and decision makers at European, national, regional and local level;
- Communicate and discuss partnerships and responsibilities and other relevant public health messages to the public and the media;
- Express the knowledge and insights achieved in the training programme in writing (reports) and orally (e.g. through presentations), at an academic level.

Philosophy and ethics – The student shall be able to:

- Define and describe philosophical main streams and identify their way of thinking in a concrete piece of text.
- Characterise basic philosophical concepts as applied within public health, e.g. the concepts of hypothesis, theory, explanation, understanding, objectivity, evidence, method (including the terms 'quantitative', 'qualitative', etc.);
- Comprehend scientific research as an interactive process;
- Present major theories of ethics and ethical considerations concerning prevention and health promotion;
- Analyse the relationship between health and human rights and apply human rights principles in his/her daily work;
- Characterise basic ethical concepts within public health, e.g., auto immunity or self decisiveness, paternalism, uninvited intervention, responsibility, respect, etc.
- Discuss the ethical aspects of qualitative and quantitative research;
- Respect other human beings including professionals.
- Communicate his/her values;
- Think in abstract terms.

Literature search and evaluation – The student shall be able to:

- Identify the most important international literature databases – within the health sciences, the social sciences, and the natural sciences – applied in public health for the identification of:
 - Theoretical literature;
 - Original empirical studies;
 - Reviews;
- Construct a search profile for the most important data bases and conduct a basic literature search on this basis;

- Systematise empirical literature based on main characteristics of methods, actual conduct and findings/results and based on this produce a review table presenting results in the published literature within a given theme;
- Present and systematise important quality criteria for empirical studies and apply these criteria on identified literature and literature presented to the student;
- Define the concept of meta analysis, present an overview of strengths and weaknesses of meta analyses;
- Perform a meta-analysis and summarise the findings of empirical studies through meta analysis.

Project development – The student shall be able to:

- Describe and define the main sections of a project protocol;
- Explain the aims and logics behind each section of the protocol;
- Explain the relationship between the sections of the protocol.
- Identify a relevant Public Health problem and formulate corresponding project aims and hypotheses concerning two disciplinary distinct angles on the problem; based on this the student shall be able to:
 - Develop a relevant project description complying with general principles for project descriptions, whether quantitative or qualitative;
 - Plan the theoretical and practical carrying out of the project, including the establishment of relevant collaborating partnerships, the requisition of necessary permissions, and the establishment of the necessary financial basis;
 - Plan and carry out the data collection, whether data are primary or secondary (data collected by others; published data);
 - Plan and carry out relevant data retrieval and analysis;
 - Communicate different stages of own project course in order to have them critically and constructively commented upon by professionals;
 - Write a brief thesis in clear language, easy to read, without spelling errors or poor syntax, including the following sections:
 - Summary in own language and/or in one of the larger European languages different from one's own;
 - Table of contents;
 - Introduction;
 - Aims and hypotheses;
 - Material and methods;

- Results;
- Discussion;
- References (based on the Vancouver rules);
- Annexes;
- Produce and perform an about 15 minutes oral presentation of own finalised project and thesis, applying relevant audio-visual tools;
- Critically evaluate the project, its aims, hypotheses, methods and results, in a professional oral discussion.
- Critically and constructively discuss the projects of other Public Health professionals.

IT use – The student shall be able to:

- Make use of relevant devices including up-to-date PC's and projectors;
- Handle files;
- Make use of the programme packages most commonly used in public health;
- Implement relevant programme packages in own stationary PC or a lab top PC.

Other – The student shall be able to:

- Function as a life-long learner based on own and other persons' and groups' initiatives;
- Acquire skills as concerns also innovative techniques, including documentation methods and IT (for example networking).

Intellectual competencies – The student shall know and understand:

Strategy making – The student shall know and understand:

- The definitions of strategy and difference among strategy, policy, programmes and plans;
- Essential aspects of public health strategies and key issues in strategy development;
- Two main categories of public health strategies – general and sectoral strategies;
- Classification of strategies according to geographical coverage
- Main factors that influence strategy implementation (critical factors for successful implementation);
- Best practices of public health strategies as tools for development (European, national, regional, local level);
- Contemporary public health strategies in the Europe Region;

Communication – The student shall know and understand:

- The basic theories and principles of learning processes;
- The basic theories and principles strategic communication;
- The basic theories and principles marketing;
- The basic knowledge of other professions and their professional identity.

Philosophy and ethics – The student shall know and understand:

- Major philosophical and ethical theories relevant for public health, including philosophy of science and social philosophy.
- Different theoretical paradigms and perspectives and able to use them appropriately (positivism, postpositivism, interpretivism, constructivism, critical theory, symbolic interactionism, phenomenology and feminism);
- Legal and ethical aspects on health;
- The ethical dimensions of professionalism in relation to the implementation of responsibility and accountability in an institutional context;
- Respect and adhere to ethical principles regarding data protection and confidentiality regarding any information obtained as part of the professional activity.

Literature search and evaluation – The student shall know and understand:

- Sources of published scientific and other public health documentation;
- Principles and methods of literature search, literature evaluation and meta-analysis.

Project development – The student shall know and understand:

- The general structure of a scientific manuscript and of a project protocol.

IT use – The student shall know and understand:

- Systems for electronic data handling and related instruction material.

Other – The student shall know and understand:

- Basic concepts of human health including basic anatomy, biochemistry and physiology.
- Alternative health measures, including their nature, cultural and psychological aspects frequency, legal aspects security aspects.

ASPHER publications and ASPHER-related publications

Foldspang A (Ed.). Provisional Lists of Public Health Core Competencies. European Public Health Core Competencies Programme (EPHCC) for Public Health Education. Phase 2. ASPHER Series N°4. Brussels: ASPHER, 2008.

Goodman J, Overall J, Tulchinsky T. Public Health Workforce Capacity Building. Lessons learned from 'Quality Development of Public Health Teaching Programmes in Central and Eastern Europe'. ASPHER Series N°3. Brussels: ASPHER, 2008.

Foldspang A (Ed.). Provisional Lists of Public Health Core Competencies. European Public Health Core Competencies Programme (EPHCC) for Public Health Education. Phase 1. ASPHER Series N°2. Brussels: ASPHER, 2007.

Foldspang A, Louvet T, Normand C, Sitko SJ (Eds.). ASPHER 40th Anniversary. 1966-2006. Anniversary Book. ASPHER Series N°1. Saint-Maurice: ASPHER, 2006.

Foldspang A, Louvet T et al (Eds.). Vademecum, The European Master of Public Health (EMPH). Saint-Maurice: ASPHER, 2005.

La mejora de la Calidad y la Acreditación de programas de Formación en Salud Pública, Un proyecto conjunto, Fundación Merieux –ASPHER 2000-2001. Valencia: Escuela Valenciana de Estudios de la Salud: Artes Graficas, 2004.

Bury J, Gliber M. Quality Improvement and Accreditation of training programmes in Public Health, Fondation Mérieux-ASPHER Joint project 2000-2001. Lyon: Edition Fondation Mérieux, 2001.

Laaser U. The Internet Journal of Public Health Education, (http://www.aspher.org/D_services/I-JPHE/I-JPHE_Home_Page.htm). 1999; 1.

Ministry of Health Kazakhstan, WHO, ASPHER. Kazakhstan School of Public Health, Project Document. Copenhagen: Regional Office World Health Organisation, 1997.

ASPHER-European Commission. Inventory of Public Health and Health Promotion Training in the European Union, Database and Background materials, Maastricht: Primavideo, 1997.

ASPHER. Rapid Survey of National Institutes of Public Health in the European Union. St Maurice: ASPHER, 1996.

Laaser U, Leeuw de E, Stock C. Scientific Foundations for a Public Health Policy in Europe. Weinheim und München: Juventa Verlag, 1995.

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Köhler L, Bury J, Leeuw de E, Vaughan P. Collaboration in European Public Health Training: Position paper ASPHER. Maastricht: University of Maastricht: Uniprint, 1994.