Introduction and objective

‘One Health’ is a methodological approach which implies interdisciplinary collaboration, joint efforts and communication in all aspects of veterinary and public health aiming to protect humans, animals and the environment. Recent challenges requiring a One Health approach include the Avian Influenza epidemics and spread of antimicrobial resistance. Both problems have highlighted the importance of close collaboration between the medical-, veterinary-, food and agriculture sectors in prevention and control. Experience has shown that collaboration between the research community, authorities, industry and other stakeholders is essential in prioritized decision making and timely and effective prevention and control.

The overall objective of this course is for the participants to acquire in-depth knowledge about the One Health approach when solving national, regional and global challenges. Special focus is on health problems associated with the spread of pathogens from animals and humans (zoonoses):

- transmission and exposure
- molecular and epidemiological methods in surveillance
- outbreak investigations
- mapping of zoonotic pathogens, antibiotic resistance
- risk communication and management

The One Health course is a full-time course and part of the Danish veterinary education program. The content will be tailored to meet needs of participants from partner countries in Danida’s (Danish International Development Assistance) “Partnering with Denmark” initiative (http://amg.um.dk/en/technical-guidelines/partnering-with-denmark).

Through case work the participants will learn how to develop systematic, stepwise approaches into cost-efficient and sustainable disease control programs based on evidence from literature and new/own investigations of zoonotic diseases and other food safety problems. Approaches to handling foodborne (e.g. salmonella, campylobacter, VTEC 0157), waterborne (e.g. cryptosporidia) and air-, vehicle or vector-borne pathogens (e.g. West Nile Fever, Q-fever) will be addressed during the course.

Teaching principles

Learning will be through lectures and seminars, including invited experts, and through active participation in problem-based group work and practical exercises. Exercises and problem-based learning involving cases / scenarios in which the course participants will work in groups under supervision from teachers and external contributors from ‘the public health administrations’, including the Danish Veterinary and Food Administration, other research institutions, the private industries, e.g. Danish Agriculture & Food Council, etc.

Course participants will be expected to seek literature and other types of relevant information to solve cases using One Health approaches in practice. The cases and challenges will be chosen according to current challenges faced not just in Denmark, but also by international organizations such as WHO, FAO and countries in the “Partnering with Denmark” initiative. The cases will be used to exemplify control and prevention of zoonoses and other health hazards. Course participants will learn scientific methods, and be encouraged to practice and develop skills required for taking leadership in groups aiming to solve problems in the complex One Health settings. The course is a full-time course.

In the last part of the course, the participants will prepare a case report (2 weeks) on a self-selected One Health problem and spend 3 weeks on internship in a suitable organization.

Eligibility and examination

Participants are expected to have a post-graduate education (MSc) within the science area or extensive working experience within food safety. Good communication skills in oral and written English are essential.

Oral defense of written assignment (case group report). Evaluation of individual written case report. Marking scale is pass/not passed. The course is equivalent to about a third of a one-year MSc degree program (21.5 ECTS).
Learning outcome
After the course, the objective is that the students will have gained:

### Knowledge
- Understand the One Health concept and interdisciplinary aspects
- Understand the distinction between One Health and One Medicine
- Know and be able to describe characteristics and challenges of different One Health cases and topics with a focus on zoonoses
- Know about methods to analyze the impact on human and animal health issues related to microbial contamination of food and the environment
- Understand the principles for prioritizing and choosing between intervention strategies for disease control
- Know the principles for identifying optimal methods for prevention and control of infectious diseases, food safety threats and antimicrobial resistance
- Understand the advantages and challenges of applying One Health approaches in industry and public administrations
- Understand the potentials and benefits of veterinarians taking leadership in One Health challenges

### Skills
- Be able to apply various scientific methods to specific One Health problems
- Be able to critically discuss and respond to One Health challenges
- Be able to identify the roles, responsibilities and needs of key stakeholders in prevention and control of infectious diseases
- Be able to search for and find materials needed to apply One Health methodology in appropriate ways including scientific literature, national and international legislation, online materials of key organizations etc.
- Be able to take part in the work in an interdisciplinary group aiming to solve a complex health challenge in a constructive manner drawing on own core competences

### Competences
- Be able to identify infectious disease challenges that need One Health approaches to be solved or mitigated, and be able to contribute critically to the implementation of the One Health approach when needed
- Be able to identify health problems that would not benefit from use of the One Health approaches
- Be a valuable collaborator to stakeholders in One Health challenges by being aware of the core competences that each participant in a working group brings into the One Health collaborative groups
- Be able to critically evaluate other people/organization’s suggestions to solutions to One Health challenges
- Be able to apply leadership competences required for One Health solutions to be applicable and successful
- Be able to communicate orally and in writing about One Health cases and approaches in a clear manner