

## **LKT0030 Food Safety and Quality**

### **Outcomes, evaluation methods and criteria (minimum)**

#### **General evaluation:**

Course consists of two part: Introducing of food and hygiene legislative documents of EU and Estonia, teaching of principles of self control system and methods to assure food safety in food industry according to legislation requirements (1. part) and teaching of internationally recognised modern sampling and test methods and techniques to determine microbiological hazards (2. part).

Course ends with exam (in written form).

**Exam`s prerequisites are:** positively submitted homework, successful performing of all laboratory works, positively submitted oral presentation (PowerPoint) about the results of laboratory works and 1 test in written form that demands knowledge in theory linked with practice.

**Homework:** Students have a personal task to provide hazard analysis and risk assessment, construct the flow diagram, determine CCPs for one certain food product. Homework is assessed on a 100 point scale.

Written exam consists in two separate (intermediate) exams. Both exams are evaluated student`s theoretical knowledge of different parts of course (I and II part) and practical skills. Separate exams are assessed on 100-point scale and it forms 50% of final result.

In forming the mark of 1. separate exam the obtaining of the students` knowledge about study outputs 1-3 are considered. In forming the mark of 2. separate exam results of performed written test and submitted oral presentation are considered (study outputs **4 and 5**). Works which score is over 50 points are taken into consideration.

**Exam is performed if results of both separate exams are minimally 51% of maximum grade point.**

#### **Study output 1:**

Student knows and can use terminology concerned in food safety;

Orientates in food legislation.

**Assessment method:** homework, exam in written form.

**Assessment criteria:** Knowledge of main demands of Food legislation documents (food law, hygiene directive, labelling directive etc), correct using of terminology of this field.

#### **Study output 2:**

Student knows principles of elaboration HACCP-plan and can establish those skills in real situations in food enterprises;

Student can construct detailed flow diagram, knows food hazards and can assess their severity and likelihood of occurrence;

Student can find correct preventive measures to minimize or avoid hazards; can identify CCPs, select critical limits for CCPs and establish monitoring system to control CCPs;

Student knows prerequisite programs.

**Assessment method:** homework, exam in written form.

#### **Assessment criteria:**

Are assessed:

- theoretical knowledge and practical establishing of food safety - HACCP concept and using its principles in elaboration of HACCP-plan;
- Skills of student to construct detailed flow diagrams and analyse potential hazards;
- knowledge about PRPs and skills to use appropriate control measures.

**Study output 3:**

Student knows principles of food quality assurance according to standards EVS-ISO 9001 and EVS-ISO 22000 requirements to elaborate food quality and safety management systems in food enterprises.

**Assessment method:** homework, exam in written form.

**Assessment criteria:** Are assessed knowledge of principles of food quality assurance according to requirements of standards EVS-ISO 9001 and EVS-ISO 22000 to elaborate food quality and safety management systems in food enterprises.

**Grade based on outputs 1-3 (including homework):**

5(A) (91-100 p) – student knowledge in all three study outputs are excellent, answers are detailed and concrete; student knows well requirements of food legislation concerned hygiene and food safety. Student can completely establish HACCP principles to elaborate food assurance system (deep hazard analysis, and correct selection of preventive measures; construction of correct flow diagrams. Correct determination of CCP and appropriate selection of monitoring methods;

4(B) (81-90 p) - student knowledge in all three study outputs are very good, answers are clear and concrete; student knows sufficiently requirements of food legislation concerned hygiene and food safety. Student can establish HACCP principles into practice, but needs some help to provide hazard analysis, and select of preventive measures; to correct construction of flow diagrams, correct determination of CCP and appropriate selection of monitoring methods also needs supervision to a small extent;

3(C) (71-80 p) - student knowledge are good, answers are clear and concrete, but some mistakes exists in establishing HACCP system (some mistakes take place in identification of hazards, or in construction of flow diagrams, in determination of CCP and appropriate selection of monitoring methods; student knows partly requirements of food legislation concerned hygiene and food safety;

2(D) (61-70 p) – student knowledge are satisfying, but all answers are not correct and concrete; student knows quite well terminology, but not all necessary requirements of food legislation concerned hygiene and food safety. Student cannot establish HACCP principles completely to elaborate food safety assurance system (hazard analysis and correct selection of preventive measures; construction of correct flow diagrams; correct determination of CCP and appropriate selection of monitoring methods);

1(E) (51-60 p) – student knowledge are exiguous, answers are not correct and concrete; student makes mistakes in basic terminology, also he/she does not know necessary requirements of food legislation concerned hygiene and food safety. Student cannot establish HACCP principles completely (hazard analysis and construction of correct flow diagrams. Correct determination of CCP and appropriate selection of monitoring methods) to elaborate food safety assurance system

**Study output 4:**

Student knows the major biological agents capable of causing foodborne illness. Student knows pathogen profiles and factors affecting their growth and survival. Student knows appropriate preventive and control measures for each agent (*Campylobacter*, *E. coli*, *Listeria*, *Yersinia*,

*Shigella*, *Salmonella*, *Staphylococcus*, *C. botulinum*, *C. perfringens*, *B. cereus* bacteria), parasites found in food, Hepatitis A, Norwalk, Rotaviruses. Student knows the major principles for the establishment and application of microbiological criteria for food.

**Assessment method:** exam in written form.

**Assessment criteria:**

Are assessed knowledge of the major biological agents capable of causing foodborne illness, pathogen profiles and factors affecting their growth and survival, preventive and control measures for each agent and the major principles for the establishment and application of microbiological criteria for food.

**Grade based on output 4:**

5(A) (91-100 p) – student knowledge in study output are excellent, answers are detailed and concrete; student knows well the major biological hazards, pathogen profiles and factors affecting their growth and survival, appropriate preventive and control measures for each agent and major principles for the establishment and application of microbiological criteria for food.

4(B) (81-90 p) - student knowledge in study output are very good, answers are detailed and concrete; student knows well the major biological hazards and appropriate preventive and control measures for each agent, but small inaccuracies are in pathogen profiles. Students knowledge in principles for the establishment and application of microbiological criteria for food are very good.

3(C) (71-80 p) - student knowledge are good, answers are clear and concrete; but inaccuracies are in preventive and control measures and in pathogen profiles. Students knowledge in principles for the establishment and application of microbiological criteria for food are good.

2(D) (61-70 p) – student knowledge are satisfactory. However, not all of answers are not correct, but not in the basic knowledge.

1(E) (51-60 p) – student knowledge are poor, errors occur in the basic concepts.

**Study output 5:**

The student is familiar with main microbiological monitoring methods for assessment of drinking water quality, hygiene of food processing environment and hand hygiene.

**Assessment method:** assessment consists of three units

I. Sampling in food production environment and practical work in laboratory

II. Oral presentation (PowerPoint) about the results of practical works

III. Multiple choice written test. The test is designed to get student to think carefully about practical issue, practical applications.

**Assessment criteria:**

I. Attending all the practicals is important. The practical skills students learn in one exercise will be used in future exercises. Successful performing of all practical works.

II. Oral presentation (PowerPoint) about the results of practical works

**Criteria for presentation:**

The structure of the presentation is logical, the contents of the report is very convincing, clear, fluent.

Use of illustrated additional materials.

Fit within the given period.

Presentation of findings, discussion, conclusions.

Knowledge in the subject, answering to the questions

**The formation of the presentation grade:**

1(E) - (51-60 p) The presentation is not convincing.

There are no additional illustrative materials.

The student presents the main findings of the work, but there are no discussion, no conclusions.

2(D) - (61-70 p) The presentation is not convincing.

The presentation contains additional illustrative materials.

The student presents the main findings of the work, but the discussion is not sufficient.

There are no conclusions.

3(C) - (71-80 p) The main parts of presentation are persuasive and clear.

The presentation contains additional illustrative materials.

The student presents the results of the work, but the conclusions are not sufficient.

4(B) - (81-90 p) The presentation is logical, very convincing, clear, fluent.

The presentation contains additional illustrative materials.

The reasons given are sufficient to explain the findings.

The presentation will fit within the given period.

The student's knowledge in the subject area is good, answers to the questions are good.

5(A) - (91-100 p) The presentation is logical, very convincing, clear, fluent.

The presentation contains additional illustrative materials.

The reasons given are sufficient to explain the findings.

The presentation will fit within the given period.

The student's knowledge in the subject area is very good, answers to the questions are excellent.

III. Multiple choice written test based on laboratory works-related theoretical material. Evaluation is on a 100-point scale. The test is passed if the result is at least 51% of maximum grade point.

**Final grade of exam:**

Final mark is based on both intermediate exam results.

Exam is performed if results of both separate exams are minimally 51% of maximum grade point. Points of intermediate exams both form 50% from final mark.

**Prerequisites:**

Food microbiology; food fermentation